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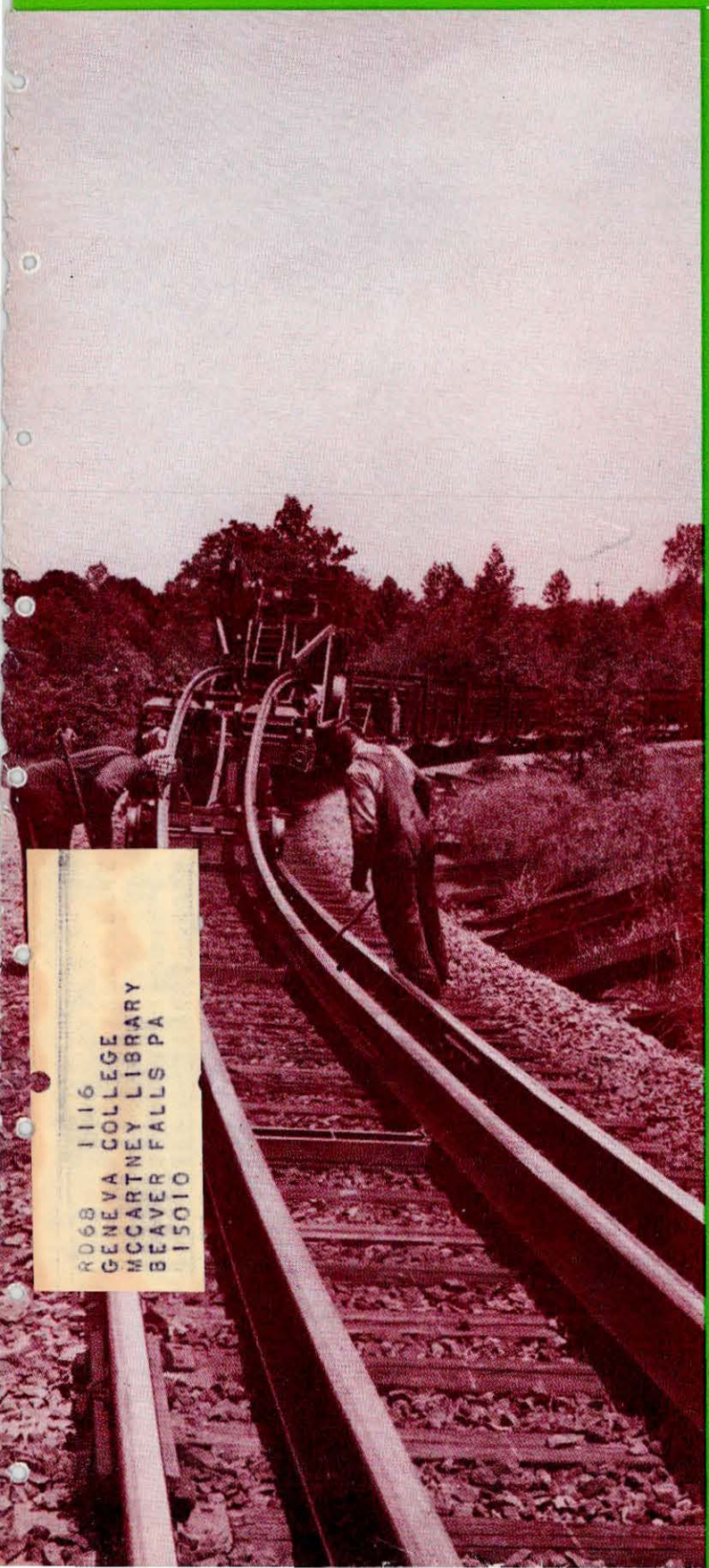
THE TRANSPORTATION WEEKLY



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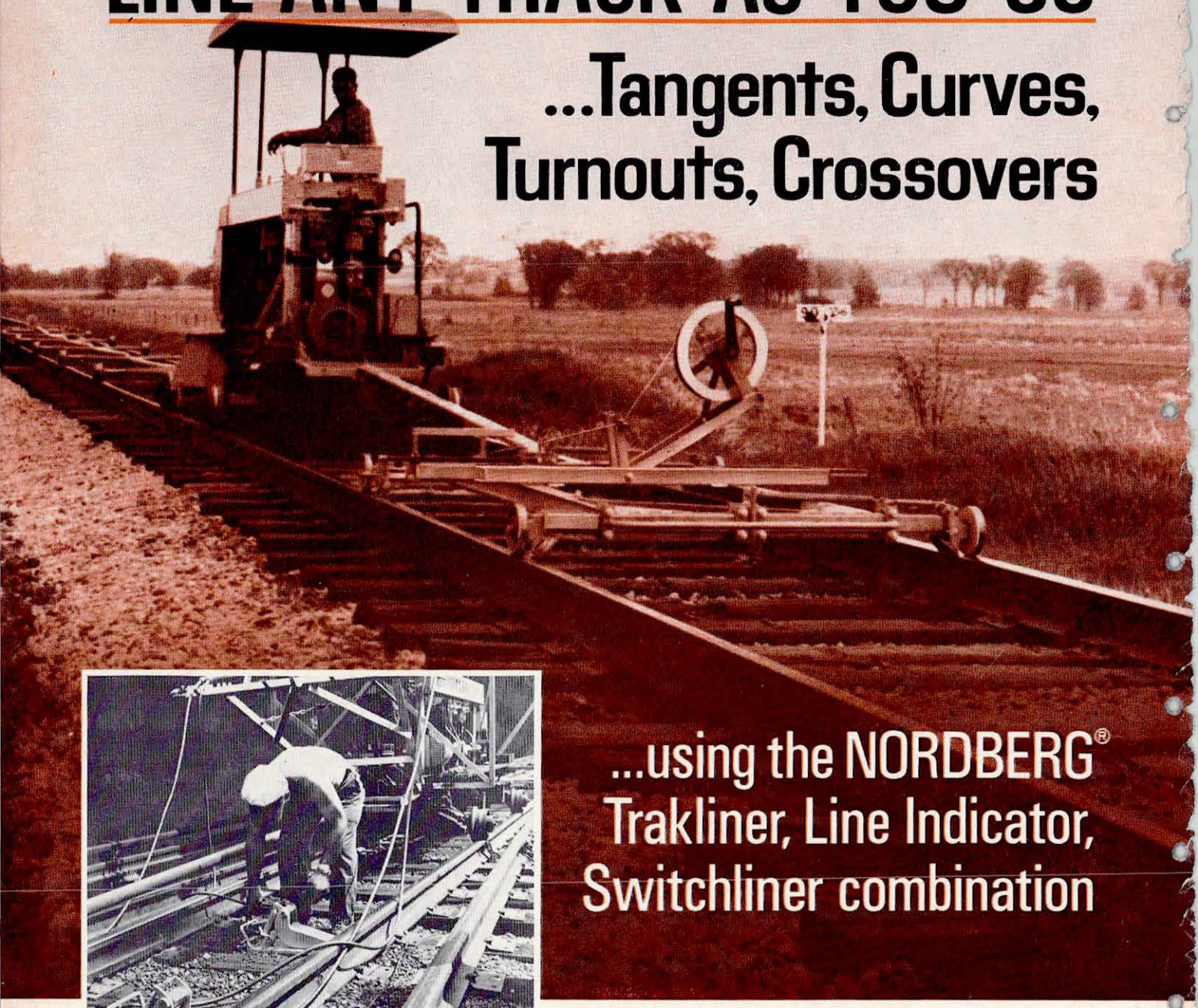
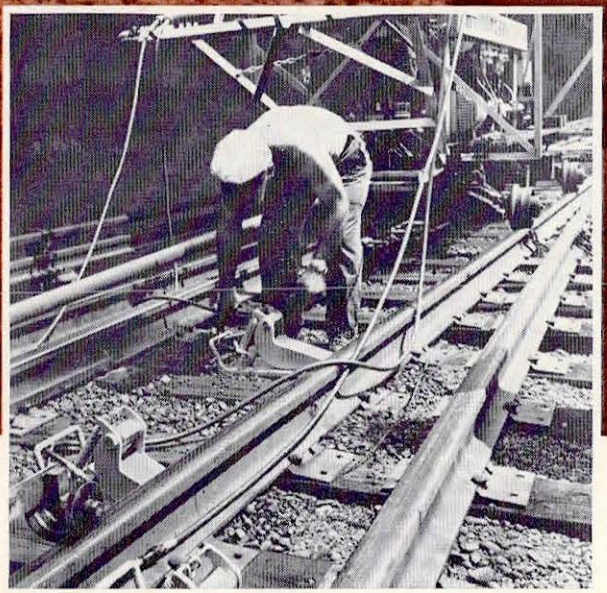
...Tangents, Curves, Turnouts, Crossovers





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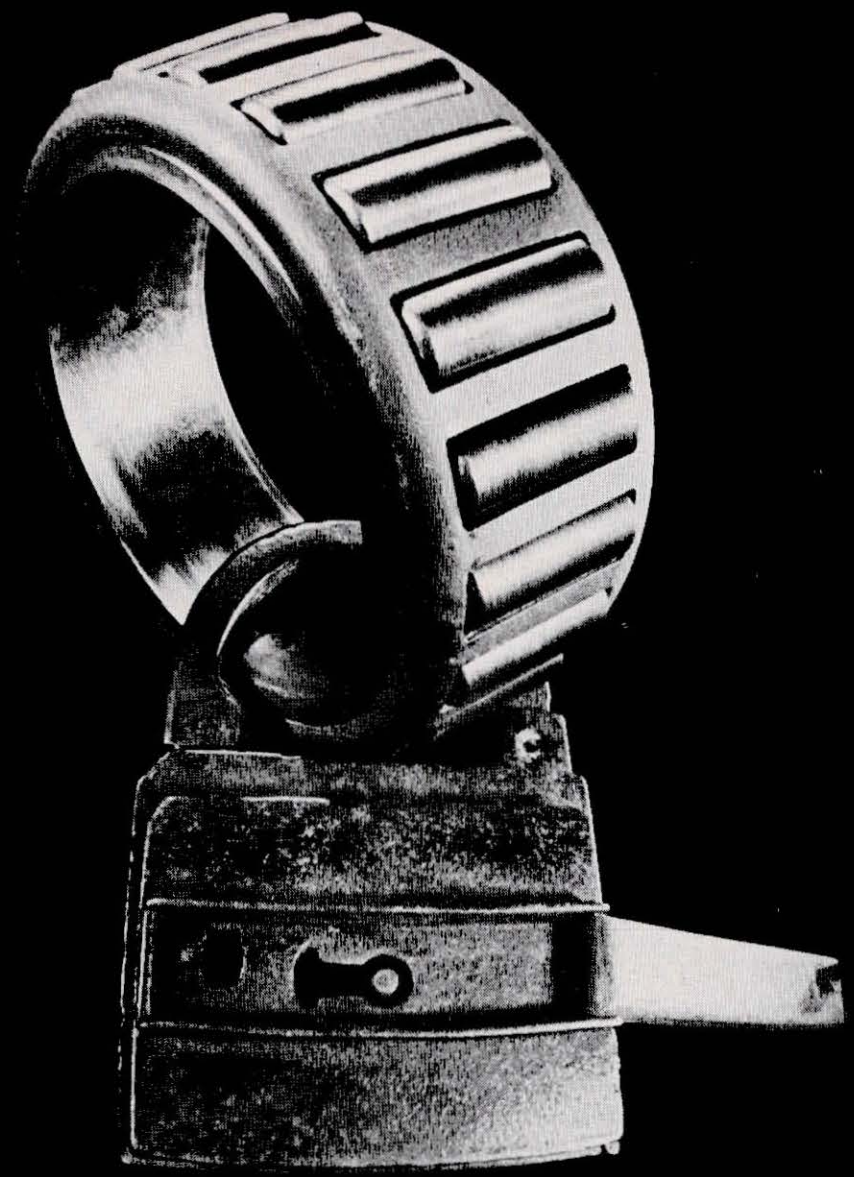

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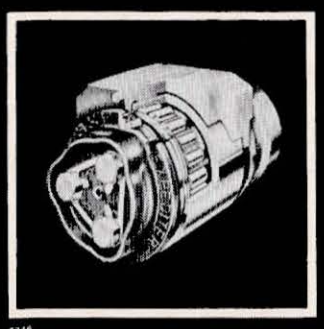

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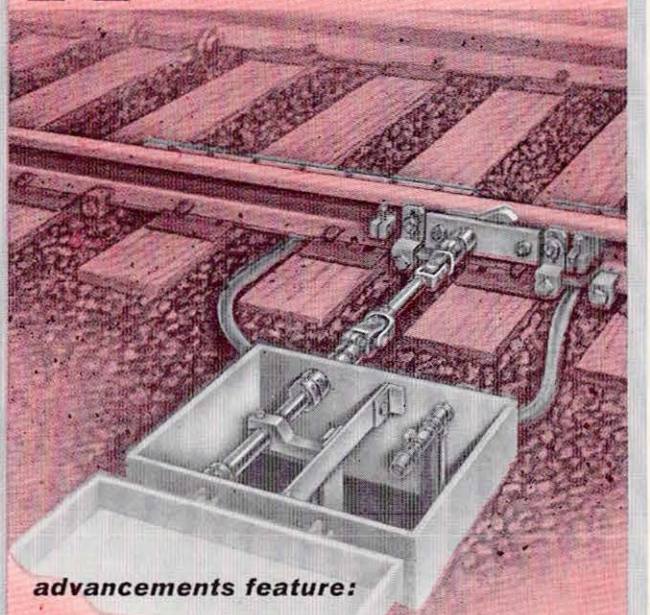
11 *new universal shaft*

provides a new higher degree of adjustability to modern track conditions.



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RAILWAY AGE

Nov. 11, 1968 • Vol. 165, No. 19

THIS WEEK

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Such programs, the Southern says, cut costs and hike revenues.

20 Electrification prototype
A new industrial railroad uses commercial-frequency electricity.

21 How the MP cut down a busy yard
Tracks had to be lowered and graded to improve clearances.

40 Viewpoint—Can advertising save the "California Zephyr"?
Only time will tell, but three railroads are giving it a big try.

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. . . AND COMING NEXT WEEK

A special report on budget planning for 1969 will be featured in the Nov. 18 Railway Age. The report will cover all of the railroad industry's major departments: mechanical, track and structures, signaling and communications, and transit operations. The latest trends in the 1969 business outlook will be highlighted. Also, the report will take a sharp look at railroad plans for new equipment and facilities in 1969.

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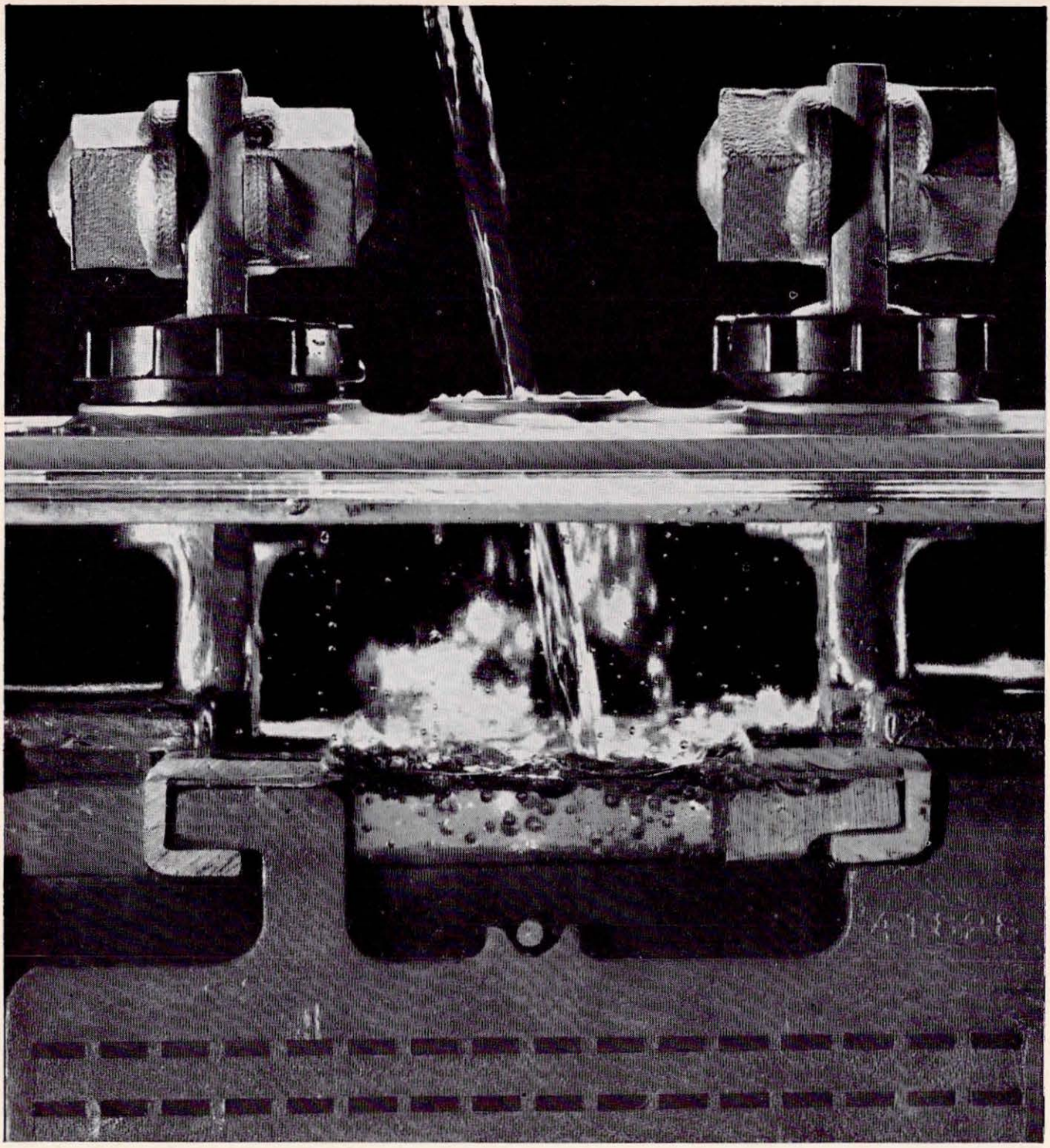

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SHORT AND SIGNIFICANT

Penn Central, Kayser-Roth halt merger

Merger plans of the Penn Central and Kayser-Roth were terminated last week. PC Chairman Stuart T. Saunders and Kayser-Roth Chairman Chester H. Roth said they were "unable to agree upon final detailed terms." A spokesman emphasized that this did not mean PC was halting its diversification program.

Jersey votes $200 million for rails

New Jersey commuter railroads will undergo a comprehensive improvement program after voters by more than a 2 to 1 margin approved a bond issue providing $200 million in state funds for upgrading rails. New Jersey Transportation Chief David Goldberg said he will launch the state's program after discussing it with the railroads involved. Goldberg said he feels passage of the issue will also enable Jersey to get $125 million in federal funds to aid commuter rail improvements.

Washington suburbs vote for transit

Three counties and two municipalities in the suburban areas of Washington, D.C., voted solidly last week in favor of transit bond issues totaling $189 million. Prince George County, Md., voted 61% in favor of an $88-million bond issue. The votes in Virginia went this way: Fairfax County, 78%, $9 million; Arlington County, 78.5%, $54 million; Falls Church and Fairfax (City), 76% and 66.4%, respectively, for bonds totaling $38 million. Less good was the news from Los Angeles and Atlanta. Los Angeles turned down a transit proposal by a vote of 1.3 million to 1 million. Incomplete returns showed Atlanta defeating transit bonds.

New piggyback cuts time by 12 hours

A new all-piggyback train, inaugurated Oct. 30, from Atlanta, Ga., Charlotte, N.C., and other southeastern origins to Washington, Philadelphia, and New York, has reduced transit time by about 12 hours from all Florida points and southeast Georgia. W. Thomas Rice, president of the Seaboard Coast Line, said the new service operates over the SCL, the Penn Central and the RF&P. From Atlanta, the train picks up cars at Hamlet, N.C., which originated at Charlotte, N.C., as well as Florida, Georgia and South Carolina points. Operating at what once was considered passenger train speeds, the piggyback special stops at major terminals only long enough for inspections and crew changes. It leaves Atlanta at 8 p.m. daily and arrives in Philadelphia at 8:20 the following evening, and in New York at 12:45 on the second morning.

First report shows deficit for new D&H

Preliminary figures for the first quarterly earnings report of the Delaware & Hudson since the road became a subsidiary of the Norfolk & Western on July 1 indicate a deficit of $309,996. John P. Fishwick, D&H president, said operating revenues for the three-month period ending Sept. 30 were $9,979,721 and expenses were $8,771,410, producing a net revenue from railway operations of $1,208,311. Tax accruals, Fishwick said, were $1,292,088 and fixed interest charges amounted to $549,419 with other income of $246,188. "An unusually heavy maintenance of way program was undertaken to help upgrade D&H's track structure which contributed to the deficit," Fishwick said.

ACF hikes its dividend, cites rising orders

A 60-cent quarterly common stock dividend declared by ACF Nov. 1 is up five cents from the previous quarter. Chairman John F. Burditt said the new rate "reflects the improved outlook in the carbuilding industry and the continued steady growth of earnings from our railroad car leasing operations, and from the manufacture of automotive fuel system products and valves for the petroleum and processing industries."

MONDAY MORNING REPORT

FROM GN, A NOT TO BE FORGOTTEN FILM

The music fades out, and the screen goes blank. There's a click, as the whirring projector is shut down. The lights go on. There's scattered applause, a kind of conditioned-reflex action. Most of all, there's silence—silence reflecting emotion, and the fact that another audience has just seen a motion picture which won't soon be forgotten. Great Northern has just completed another showing of "Paced to Live."

THE THEME IS SAFETY—SCORED TO A MODERN BEAT

"Paced to Live" could be labeled a grade-crossing safety film. But it's much more than that. It's art with a message, beautifully done by an award-winning film producer. GN gave the movie-makers two things—the commission to do the job, and a free hand to innovate in carrying out that commission. The result is 18 minutes of impact, in living color, and always in the idiom of today's world. GN wanted a film that would reach the teenage audience, in particular. The guess is that few teens will tune-out *this* movie.

LIFE IS POSITIVE—AND SO IS THE MESSAGE

The deeper theme is modern living—fast, furious, geared to the automobile and guided by certain "sentinels" such as traffic lights and "Do Not Enter" signs and crossing flashers and gates. Like the pace of life, the pace of the film is fast—and positive. This is a "safety" pitch without blood, without the strident preaching that sometimes turns a fresh idea sour.

THE FILM ENDS—BUT THE IMAGES REMAIN

There are chilling notes. There are the expressions, facial expressions, that stay in the mind long after the film has run its course. There is a sequence showing an automobile skidding toward a crossing as a train rumbles by. A GN man has a whispered comment: "That one wasn't posed—and he damn near got it." An audience knows that, for the most part, it's watching actors—but the action is real.

THE TASK AHEAD—SPREADING THE MESSAGE

Great Northern, with upwards of $50,000 invested in this production, is making prints available on a non-profit basis, with the hope that as many people as possible can be reached. Preview audiences would agree: It's a hope well worth fulfillment. Jack Andrew, GN's top safety officer, summed it up: "This film—we believe young people can get with it. . . . They can live with it." They sure can—with it, and by it.

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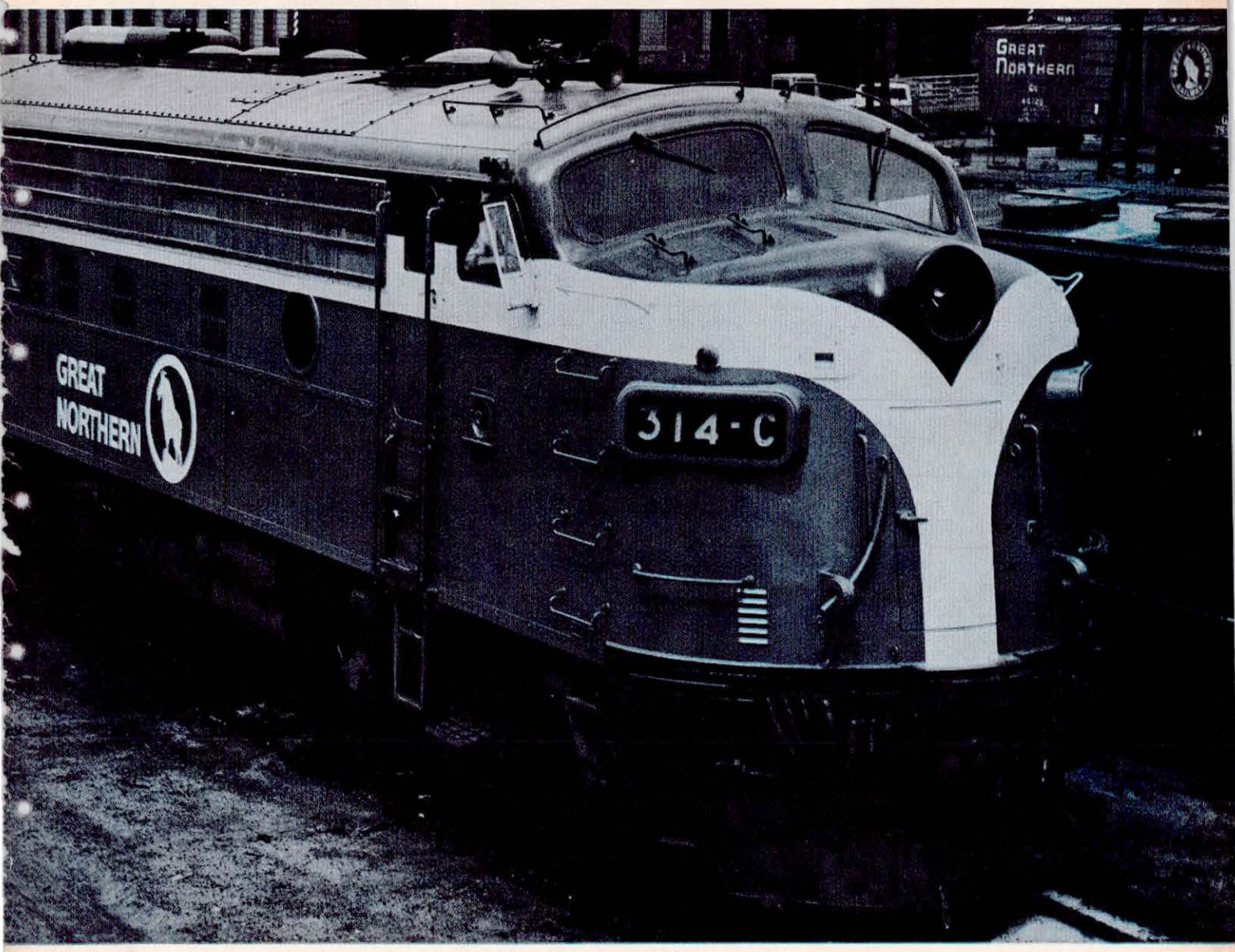

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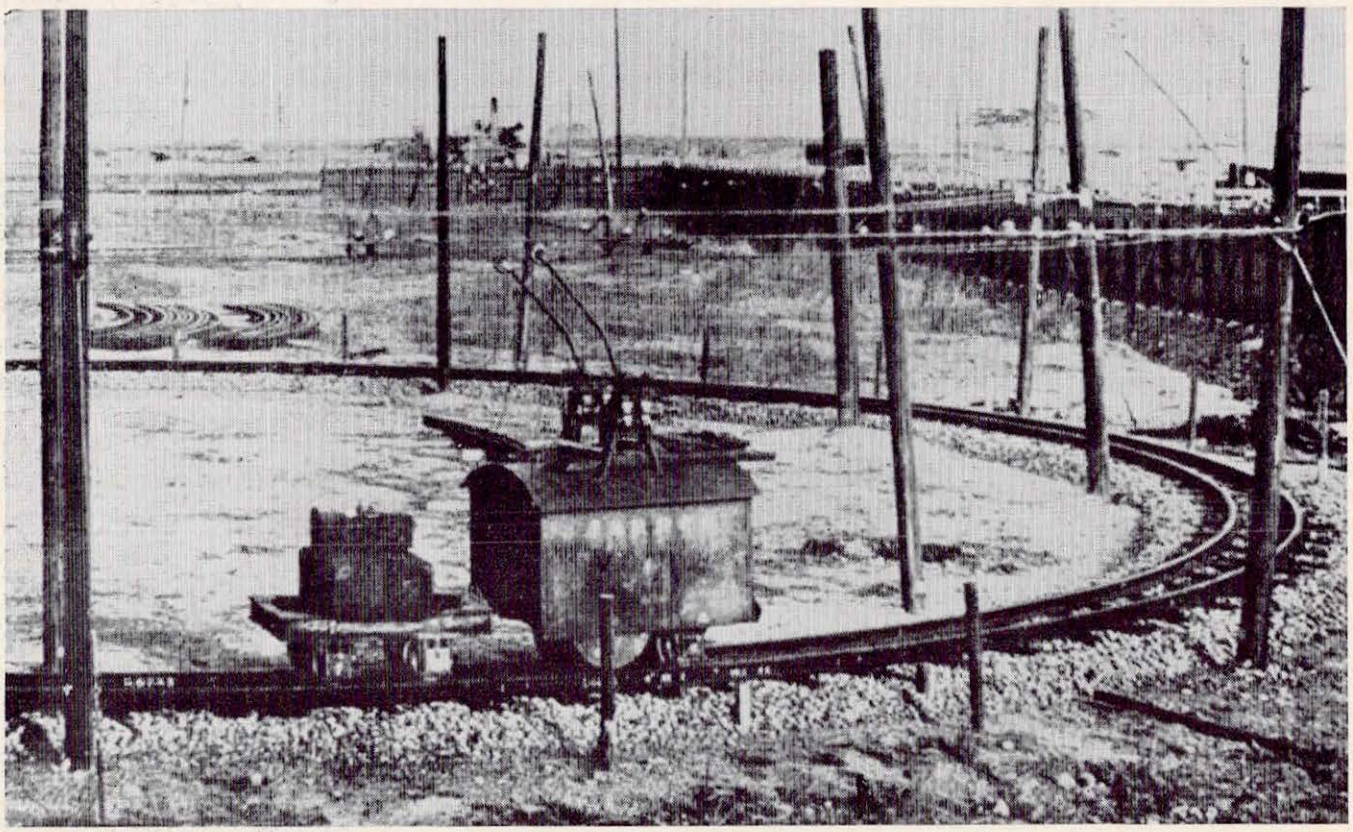

This photograph is 40 years old.
We took it at our Osaka Works in 1928 during a ten-year study of the abrasion of rails and rolling stock, in collaboration with the Japanese Government Railways. And presented the results of the research at the 2nd International Rail Assembly in Zurich in 1932.
The unusual thing is that today these results are still regarded as definitive. Nobody else has ever had to do this kind of research.
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Original rolling stock research characterizes our long history of manufacture. Our current work, for instance, will show us how to build wheels and axles for a new Japanese National Railways super-express expected to operate at speeds up to 160 mph. For this train, wheel tests are being conducted at speeds up to 200 mph.
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RAILWAY AGE
THE TRANSPORTATION WEEKLY
November 11, 1968

WEEK AT A GLANCE

Crew-consist dispute grows as BRT strikes again

The Brotherhood of Railroad Trainmen dropped the other shoe Nov. 6—on the 101st day of the Belt Railway of Chicago crew-consist strike and, for whatever significance might be attached, on the first day following the elections. At 6 a.m., Nov. 6, the BRT struck Louisville & Nashville to back up its demands that L&N add a second brakeman to some 600 yard and branch-line crews now operating on a one-conductor/one-brakeman basis. Members of other rail unions respected BRT picket lines, and L&N moved to close down operations. The National Mediation Board was notified of the walkout. And those who expected instant reaction—i.e., an immediate call for an emergency board—were correct. For what it was worth, however, Washington talks involving the Belt, the BRT and the NMB—talks which had gone on almost daily—were recessed.

Rent-a-Train: Moving ahead from a bad start

The first run of Illinois Central's Rent-a-Train was not one that IC people will recall with relish. With the train moving well, and a hot schedule about to be met, disaster hit, not once but twice. There was a derailment when the 115-car grain train was within about 30 miles of its destination, Baton Rouge, La. There was a second derailment, less serious, in Baton Rouge. That, however, was just one run, albeit the first one and, obviously, the showcase one. There will be a lot more—starting with the second Rent-a-Train run, which headed South with its cargo Nov. 4.

From EMD to UP: 25 "Centennial" locomotives

Union Pacific has long been synonymous with super-power—and in 1969, the Gold Spike Centennial year, the super-power tag will be more fitting than ever. Beginning in April, UP will receive some of the most powerful diesel-electrics ever produced, 25 EMD-built units rated at 6600 hp (delivering 6000 hp at rail). These will be UP's "Centennial" locomotive series. They will be 98 feet long, they will weigh 536,000 pounds, and their power rating will be 1,100 hp above the most powerful units now in service. Over-all, UP's 1969 equipment program will involve an expenditure of more than $105 million, with the locomotives accounting for a bit less than 20% of the total. UP President Edd H. Bailey calls the program one of the largest in the road's history—representing $1,000,000-plus for every year since the driving of the Gold Spike in 1869.

A key to intermodal transportation?

"Intermodal" was the magic word at the Second International Container Services and Equipment Exposition in Baltimore—and no single exhibit better typified the concept than the one pictured above. The all-purpose piggyback/container flat car (built for Trailer Train by the Pullman-Standard Division of Pullman Inc.) is a relative newcomer to the U.S. railway car fleet. In Baltimore, it was shown loaded with a 40-ft aluminum piggyback trailer, a stainless steel tank container and a 20-foot plywood gloss container—all products of Trailmobile, another division of Pullman. The week-long exposition was visited by 10,000 shippers and manufacturers.

GUS WELTY

LINES ON LABOR

PEOPLE GET EMOTIONAL, for some reason, when they start arguing money—salaries, their own and somebody else's. This happens in management, and it happens in labor. And the point to be made at the moment concerns labor, because the officer-salary levels and policies seem to be a sticking point with some in the proposed four-ops' unification.

THE POST-UNIFICATION PLAN, briefly, calls for uniformity-in-grade, with all officers at a given level being paid at the highest rate in existence before merger. For example, vice presidents' salaries now range from about $17,700 in the Brotherhood of Railroad Trainmen down to $13,000 in the Switchmen's Union of North America. Under the United Transportation Union scheme of things, all vice presidents would be compensated at the present BRT rate, as a minimum. The proposed constitution provides that future adjustments "will be made in the same proportion as increases or decreases in wages" received by UTU-represented employees.

THOSE WHO QUESTION the plan don't much like provisions which seem to put salaries and their determination into the hands of the beneficiaries. Further, there seems to be some concern that raising everybody to the highest pre-merger salary level will produce a kind of dollar-escalation.

THE REPLY to these arguments is a simple one: Sure, the salaries of the first officers and staff members of UTU will be set by the board of directors—but there is adequate provision for review and revision by UTU in convention.

OVER AND ABOVE these specific concerns, though, there's a bigger question: How much is the competent management of a union worth? Unions, of course, don't have quite the same salary problems as management. Salary is, or seems to be, less of an incentive to an up-and-coming union officer. And some mighty strange comparisons can be made. Would you believe, for instance, that there is at least one international railway labor organization paying its president a salary that compares unfavorably with the salaries being paid assistant trainmasters? Or, to broaden the discussion, would you believe that only a handful of rail-oriented unions come anywhere near paying what management would have to pay for the responsible and complex jobs involved? Is it possible that the present salaries of the presidents of all four UTU organizations don't add up to $100,000? Yes, it's possible. And a conclusion could be reached: Labor, maybe, has had much better leadership than it has deserved—or paid for.

Seaboard, PFE place orders for 2,400 cars

Freight-car orders, after a long, dry period, are beginning to assume boom proportions. Last week, the Seaboard Coast Line announced what it called "the largest single order for freight cars placed by any railroad this year" —an $18.5-million contract with Pullman-Standard for 1,200 50-ft, 70-ton capacity box cars, with delivery scheduled to begin in December and be completed in the spring of 1969. Meanwhile, Pacific Fruit Express, which is jointly owned by Southern Pacific and Union Pacific, placed an order with Pacific Car & Foundry for 1,200 new 50-ft, 4,000-cu-ft-capacity mechanical refrigerator cars. Deliveries will begin in February 1969 and will be completed by the end of May. Earlier, the Southern placed three different orders for a total of 1,700 new freight cars (RA, Oct. 28, p. 83). Also announced last week: GM&O's order for 200 box cars from Pullman Standard.

Containerships: A "sea bridge" for railroads

If railroads are to become a "land bridge" for maritime shipments, it's equally correct to view containerships as a "sea bridge" for railroads, in the view of one shipping industry executive. R. D. Carter, president of Transamerican Trailer Transport, Inc. (TTT), told the National Railroad Piggyback Association in Washington that "the containership of tomorrow most likely will be a 35-knot roll-on roll-off trailership closely tied to the railroads." He said the prototype of such a "marine locomotive" is TTT's "Ponce de Leon," the world's largest and fastest roll-on roll-off trailership, which makes the 1,400-mile New York-San Juan voyage in less than 60 hours. It can carry 260 40-ft trailers and 450 vehicles. Because of TTT's long term lease arrangement with REALCO for 700 trailers, TTT has become a substantial member of the National Railway Trailer Pool. "Literally, on interchange we commenced operating as another railroad while figuratively laying a rail bed between New York and San Juan," said Carter. In terms of railroad capability, the "Ponce de Leon" is equivalent to a train hauling 130 Trailer Train cars plus 30 tri-level auto carriers.

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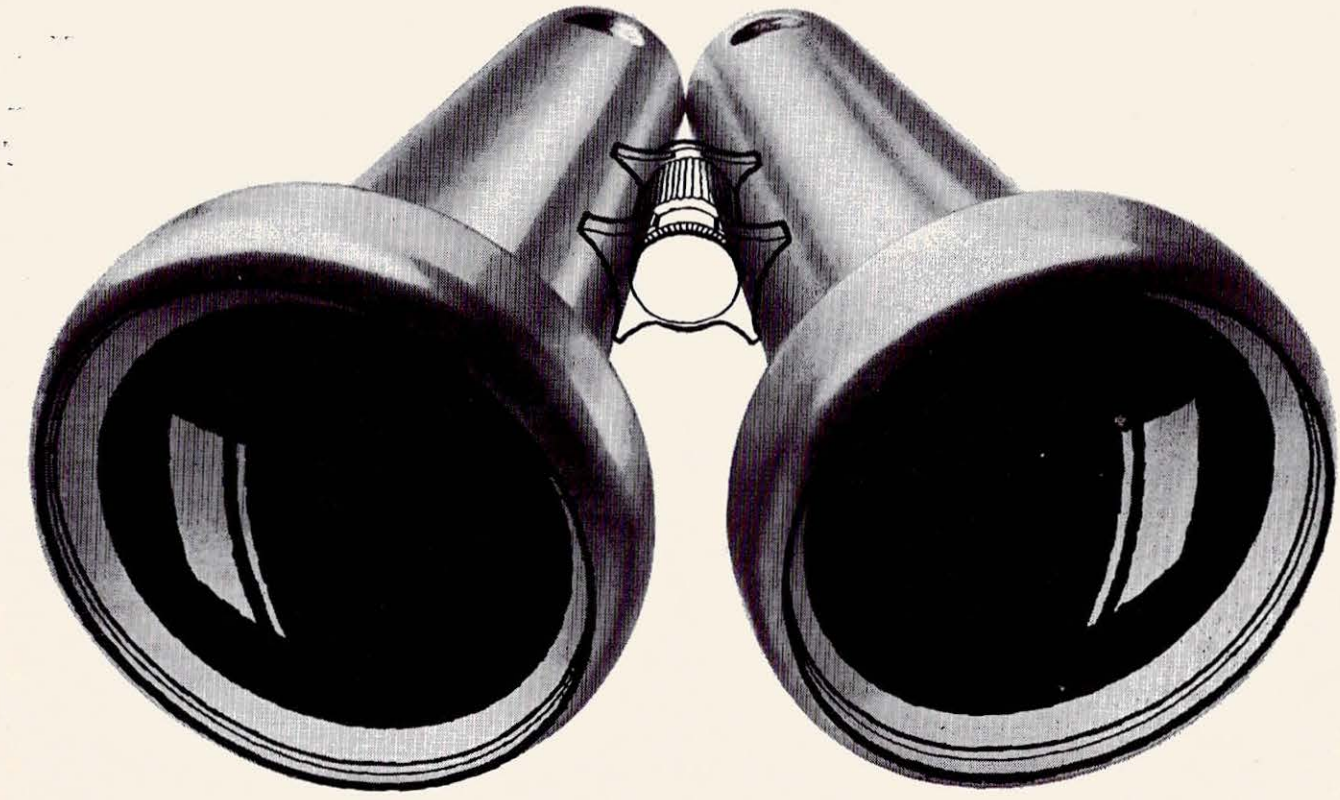

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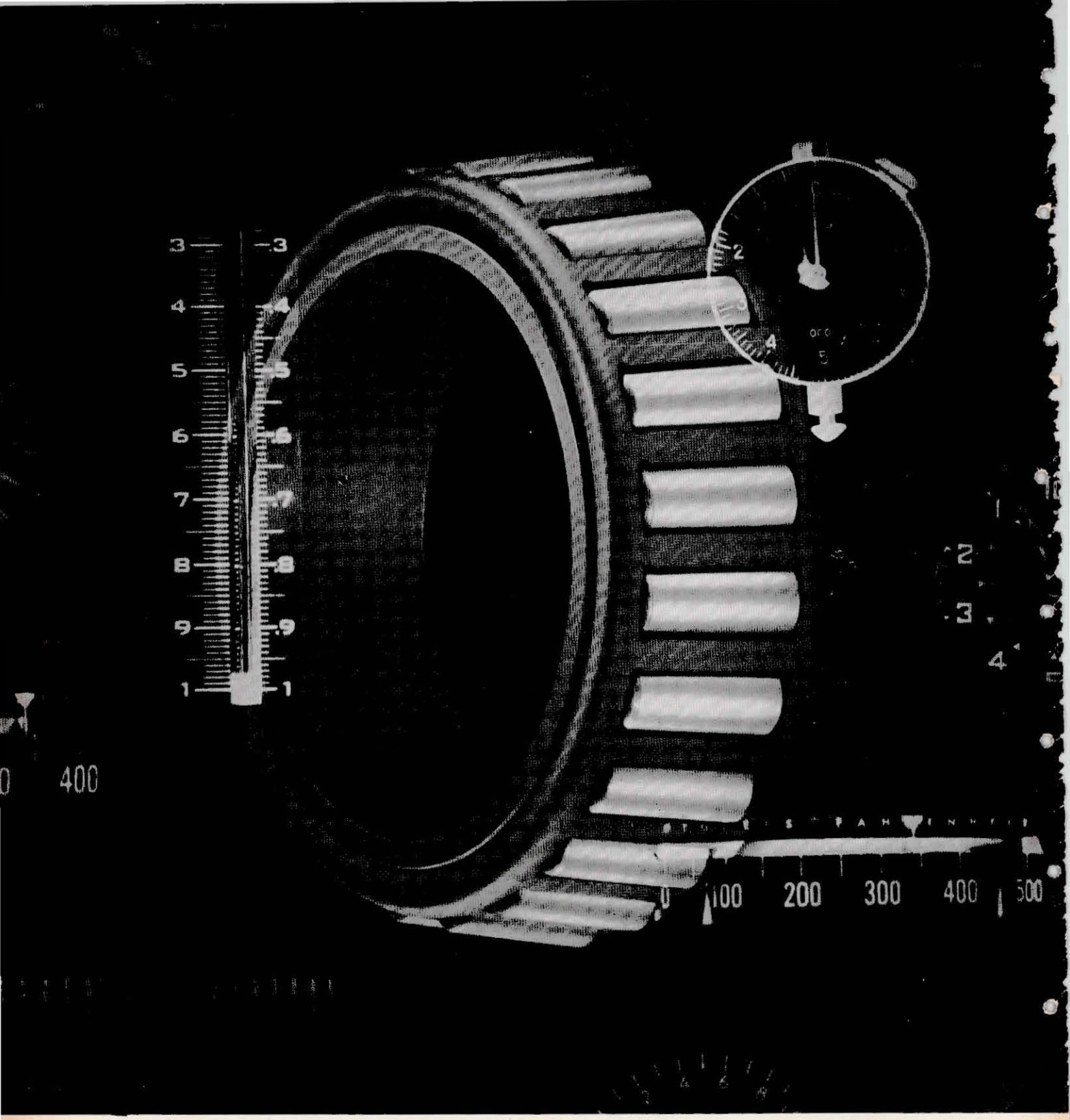

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The case for bigger M/W outlays

Southern's expanded programs have cut costs and added revenue by increasing traffic tonnage.

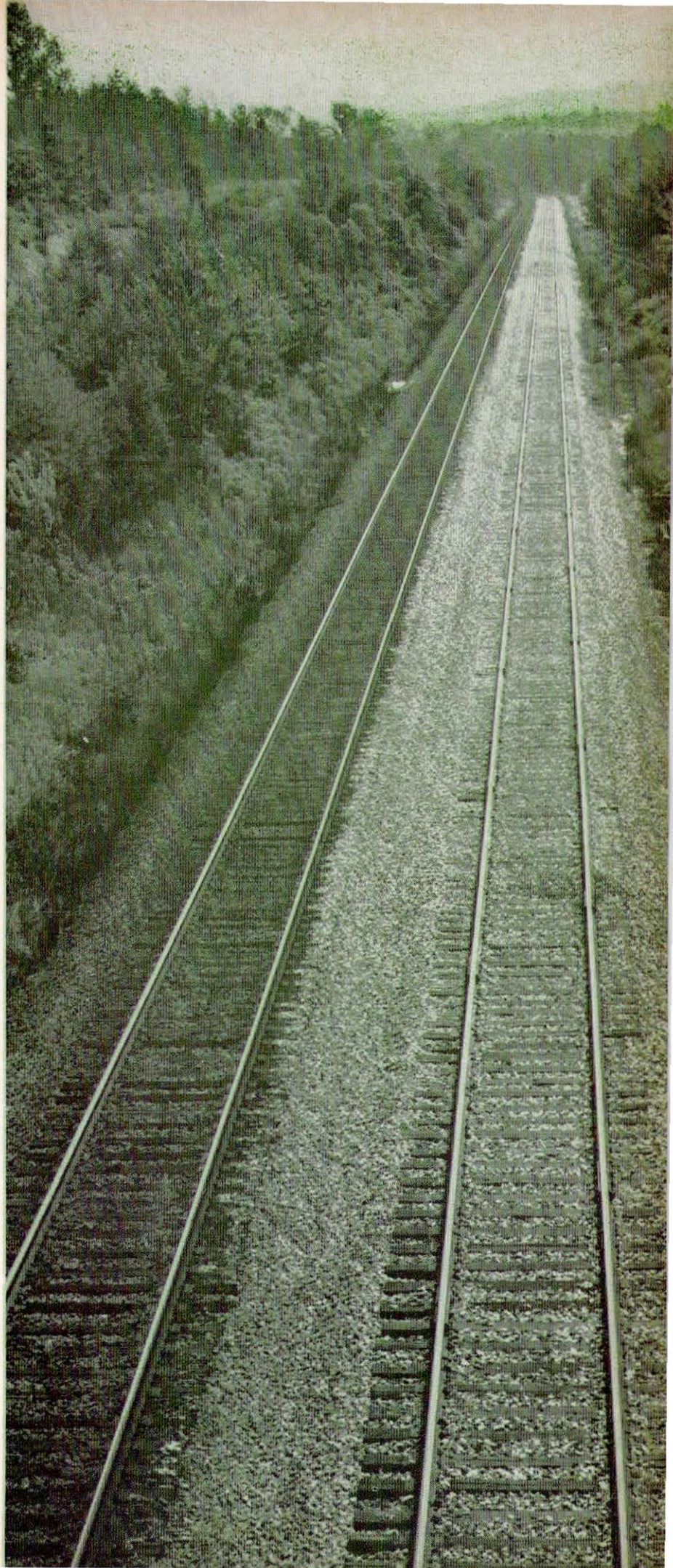
By M. H. DICK, Engineering Editor

Railroad managements are facing the need to come up with a new set of criteria for use in arriving at allocations for property upkeep, especially track maintenance.

While the new criteria will call for expanded maintenance-of-way expenditures the railroads will find themselves reaping important benefits. In sum, these will have a double-barrelled effect on railroad fortunes—substantial economies on the one hand and added revenues through better business on the other.

Sound maintenance-of-way management will thus become a factor in promoting railroad profitability.

● **Not a dream.** This may sound like a line of reasoning fabricated from the dreams of some frustrated chief engi-



neer. But it's not. Quite the contrary—it comprises a capsule version of what's going on in the mind of the operating vice president of one of the country's largest systems. Architect of this approach to M/W management is the Southern's W. H. Moore.

Public expression of these views first came in an address delivered Sept. 10 before a joint session of the annual conventions of the Roadmasters' and Bridge & Building Associations. Moore had entitled his remarks, "Building railroad profitability through sound maintenance practices." He got into the subject of maintenance expenditures after stating that railroads must get their physical plant ready to handle the increased business which he said the analysts are predicting. The predictions are, he said, that intercity movement of freight will double by 1980, with the railroads "bound to get a large share" of the increase.

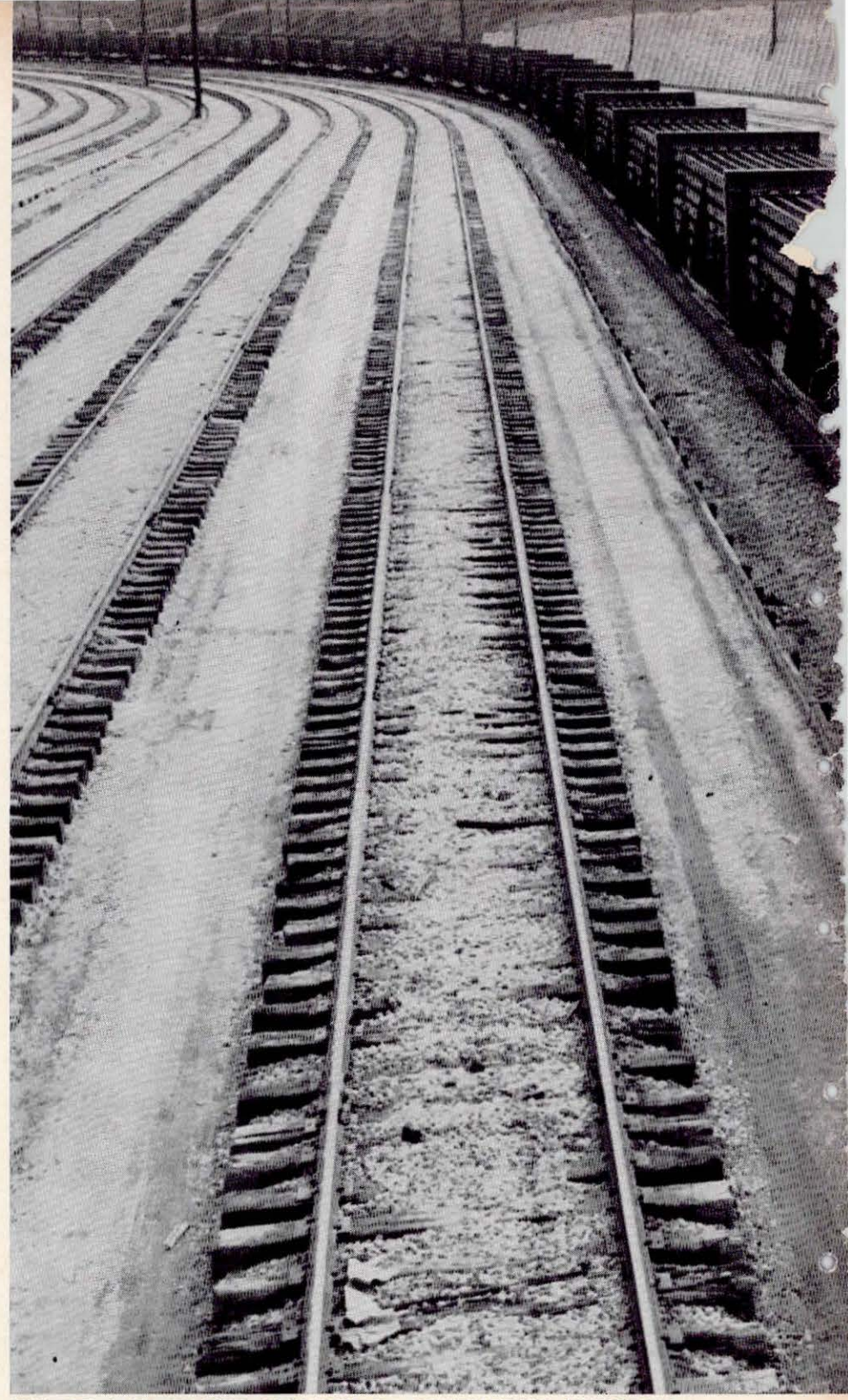
Moore then pointed out that, although Class I railroads have averaged spending $1.3 billion a year on maintenance over the last 10 years, less was spent in 1967 than in 1957, even with the sharp increases in the cost of labor and material. His audience of M/W&S men, which included a generous sprinkling of top engineering officers, had been listening with polite attention. At this point Moore made a statement that caused them to listen even more closely. "I say to you now," he said, "the American railroads must increase their spending on track maintenance."

● **Saving by spending.** Experience on the Southern was cited to explain the reasoning behind this statement. This year, said Moore, "we have already spent $3 million more on M/W than was spent last year. The heavier cars and locomotives are demanding better track. The maintenance program we have used in the past—and it was a rather healthy one—would not do the job. In the final analysis this stepped-up program will cost no more than we have spent in the past. Savings generated through fewer derailments and less loss and damage will pick up the tab. We are already three-quarters of a million dollars better off in this respect this year than last year.

"The sooner your managements decide to take this step the better off you will be. Trains will move faster, per diem on equipment will be less, derailments will diminish and, best of all, you will have more business to handle. I cannot think of a healthier situation."

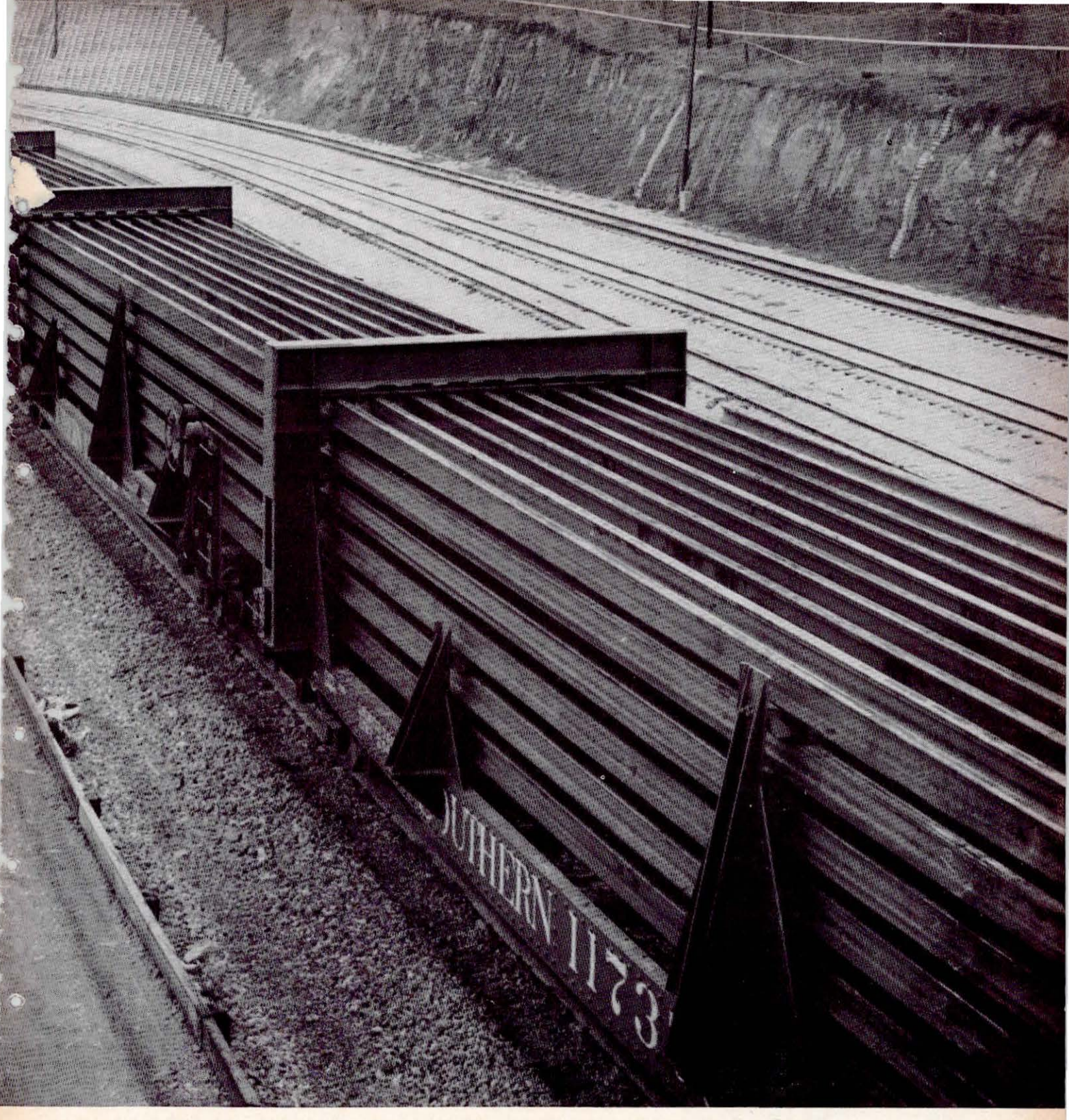
In a subsequent interview with Railway Age, Moore elaborated at length on his ideas. He gave additional details about Southern's experience with the heavier cars, the measures that are being taken to prepare its tracks for carrying these cars and the greater tonnages of traffic now being handled, what these measures have meant in terms of tie and rail renewals and track surfacing, and what he expects the road to gain from the expanded efforts.

Details about maintenance operations and field practices were provided by Southern's chief engineer, Rush A. Kelso.



WELDED RAIL IS KEY ELEMENT IN SOUTHERN'S PROGRAM
Butt-welded rail for Southern tracks is joined into 1,440-foot lengths at Atlanta, Ga.,

● **Loads, tonnage up.** In recent years Southern tracks have been subjected to a harder battering than ever before. Not only have the total revenue ton-miles carried been moving up but the individual loads have been getting heavier. Moore referred particularly to the 100-ton cars and locomotives with three-axle trucks that are in wide use on his road. These are not only having a pun-



and shipped to laying sites in trains like this. Capacity of each train (Southern has three), is 7.36 track-miles of rail.

ishing effect on the track structure generally, but they are causing the rail to wear out faster, he points out. As he contemplated these increased loads Moore offered the comment that he "isn't sure we have been maintaining our properties to the extent we should."

The 100-ton coal cars operated in unit trains have resulted in some maintenance difficulties, Moore indicates. "One of these trains moving around a curve makes a noise like a huge grinding machine," he says, "and afterwards the shiny appearance of the wheel treads make them look as if they had been turned on a lathe."

● **Problem of rocking action.** The rocking action of these cars, and also covered hoppers, is a continuing problem on the Southern as on other lines. "To prevent this trouble you've got to have almost perfect track," says Moore. "We can't and won't eliminate the 100-ton cars so we've got to do a better job of track maintenance."

Extraordinary measures are being taken to deal with this problem in a territory 250 miles long over which unit trains of 100-ton coal cars are operated. Purpose of the measures is to locate

"American railroads must increase their spending on track maintenance." W. H. MOORE, Southern

"Realistic M/W budgets depend on mutual confidence between operating vice president and chief engineer." R. A. KELSO, Southern

places in the track that might cause rocking action of the cars at the critical speed. To accomplish this, Southern is operating over the territory once a month a special train incorporating a 100-ton car and the road's R-1 track-measuring car (RA, Dec. 11, 1967, p. 20). The car trucks are instrumented to measure rocking action. The entire trip is made at the critical speed. Any places found in the track that might cause 100-ton cars to rock excessively are corrected immediately. Moore notes that trouble with rocking is "practically nil" in track laid with continuous welded rail.

● **More welded rail needed.** Such rail is a key element in Southern's program to upgrade its tracks while at the same time reducing maintenance costs. In his Chicago address Moore had said that "welded rail is needed now more than ever before because of heavier loading and the escalating cost of labor and material. It is a 'money saver' in many ways and the savings will continue with fewer joints to maintain. We have laid over 2,500 miles of welded rail on Southern, or 25% of our main-line mileage."

In the discussion with Moore and Kelso it came out that Southern lays the 1,440-foot welded strings around all curves regardless of the degree of curvature, that relay rails as well as new rails are butt-welded, and that the long lengths are joined in the field with Thermit welds. If the temperature is below 75 degrees when the rail is laid, a machine is used to raise the temperature of the steel before the anchors are applied. This practice, it was pointed out, eliminates the need to remove the anchors later on during warm weather to permit the rail to adjust itself to the higher temperature. Moore would like to see the practice of Thermit welding extended to include the welding of more joints in the turnout area.

● **Track programs up.** Southern's program to strengthen its tracks and improve the standard of track maintenance has resulted in sharply higher rail programs this year, as well as acceleration of tie renewals and track surfacing. Comparison of this year's programs with those carried out last year will serve as a measure of the work now being done. In Moore's opinion, however, the really significant comparisons are those in which the work programmed for a given year is considered in relationship to actual needs and not to what was done in some other year.

Last year the Southern laid 114 miles of new welded rail and 119 miles of relay welded rail, giving a total of 233 miles. This year the program provides for welding and laying 141 miles of new rail, and 148 miles of relay rail, giving a total of 289 miles. Continuation of the uptrend is expected next year when plans call for laying 240 miles of new welded rail and 150 miles of the relay welded rail, a total of 390 miles. Measured in terms of the money involved, the 1968 program will cost $9.5 million. Next year the price tag on the rail-improvement program will be about $15.5 million.

● **More ties, surfacing.** With respect to tie renewals and track surfacing the story is similar. The road put in 886,-314 new crossties in 1967. Insertions this year will come to 1,179,415. The plans for 1969 contemplate a further increase to 1,280,000 ties. As for track-surfacing, the trackage surfaced went up from 1,844 miles in 1967 to 1,926 miles programmed for this year. For 1969, the budget calls for 2,100 miles of track surfacing.

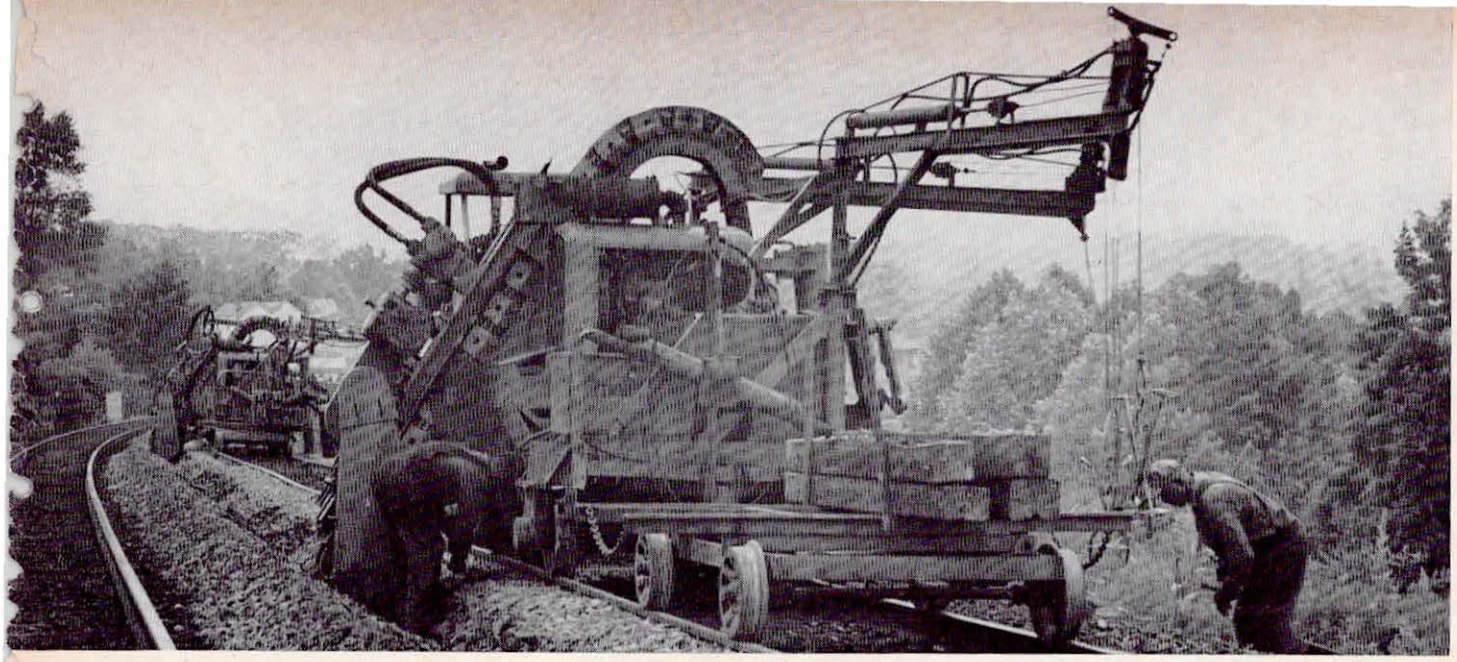
To get the greater amounts of work done Southern has had to expand its forces for doing tie-renewal and track-surfacing work. For several years the regular force assigned to this main-line work has consisted of three highly mechanized outfits. The tie-renewal portion of each of these gangs is organized around four RMC TieMasters for removing the old ties and inserting the new ones. There were, in addition, five smaller T&S gangs for yard work.

● **T&S gang added.** Output of the three large T&S gangs averages about 10,000 feet of track per gang per day, Kelso said. This year, with the T&S program somewhat greater than in 1967, a fourth T&S gang was organized. This outfit was assigned to work between Chattanooga and Cincinnati, a distance of 336 miles. This is CTC territory in which 7-mile stretches of single track alternate with 7-mile sections of double-track for two-way running.

Because of the relatively high density of traffic in the Chattanooga-Cincinnati territory, the road wanted to minimize the losses sustained when the new T&S gang had to clear the track for trains. For this reason the outfit was made smaller than the three other T&S gangs.

Existing rail-laying forces on the Southern had sufficient capacity to lay the increased allotment of new and relay rail provided in the 1968 program. Perhaps this is because of the methods and organization used in performing this type of work. Both new and relay rail for the system needs are converted into welded strings at a plant in Atlanta, Ga., which has three welding production lines. The welded strings are loaded onto rail trains, each of which will accommodate strings totaling 7.36 miles of track.

● **Four rail-laying gangs.** For laying the long rails there are four gangs, each of which divides its time between laying rail and putting in ties and surfacing track behind the rail-laying work Hence, Kelso refers to them as combination gangs. For the use of these gangs



NEW TIES FOR REPLACEMENT

The Southern puts in more new ties for replacement. Here, old ties are removed, new ones inserted by an RCM TieMaster.

there are three sets of rail-laying equipment (the dual method is used in which two strings are unloaded and laid simultaneously) and four sets of timbering and surfacing equipment.

When a train-load of welded rails is received by one of the combination gangs it proceeds to lay the rail, which it does in about a week and a half. One shift is used to lay the welded rail and a second shift each day loads the released rail by pulling the jointed strands into the rail train. When a train is laid, it is sent back to Atlanta for another load of welded rail and the rail-laying equipment is dispatched to another gang. The crew that has just finished laying a train-load of rail begins the work of timbering and surfacing the track which was just laid. Specially equipped flat cars are used to shuttle the rail-laying machinery between gangs. At about the middle of October, Kelso noted that two of the combination gangs had finished their portion of the 1968 rail-laying program and had been assigned for the remainder of the year to T&S work.

● **More rail testing.** Rail-flaw detection is another matter that demands greater attention in these days of heavier wheel loads and tonnages, Moore says. Secondary lines, siding and yard tracks are particularly in need of such attention, he believes. To help fill this need Southern is purchasing from the AAR Research Center a rubber-tired testing unit fitted with a flanged-wheel attachment. This car will supplement the company's present rail-flaw-detection operations which include the use of Sperry cars and a car leased from the AAR. "What we need today," says Moore, "are improved methods of rail testing that will do the job faster, better and more economically."

While the R-1 track-measuring car will play a role in evaluating track conditions on the Southern in the new era of heavier loads, Moore is convinced its use must be tied in with visual inspection on the ground. "There is no substitute for track inspection by local supervisory officers," he says. By such inspection he means riding over the track on motor cars, on passenger trains and in cabooses, plus walking inspection of some locations, especially curves.

● **Role of supervision.** Adequate supervision is another subject that rates a high priority in Moore's thinking as he contemplates the additional spending required today for track maintenance. The smooth, well-maintained railroad required for fast, safe, dependable service cannot be accomplished economically without the right kind of supervision, he believes. "Smooth track is the hallmark of a good supervisor," he holds, "while slow orders are the penalty the railroad has to pay when track is not good for time-table speed."

To get the caliber of supervision required today Moore believes the railroads must take active steps to recruit and train the best people possible. But aside from the matter of quality of supervision, he thinks, in view of today's conditions, there may be areas where the railroads don't have an adequate quantity of supervisory forces. Recently, he says, the Southern has had to add a number of track supervisors to its field supervisory staff. "Additional supervision may be required," he says, "to give the better control needed over the quality and quantity of work."

● **Justifying the expenditures.** Being the operating head of a large railroad system, Moore knows he can't permit himself to indulge in fanciful thinking. This means that he must be prepared to justify any increased expenditures he may recommend. He is convinced he can do this. For example, he relates the Southern's increased business this year, and it is substantial, to the decline that has occurred in derailments. This decline, in turn, he attributes partly to Southern's enlarged track-maintenance programs. "I like to think," he says, "that the better business that is coming our way now is in part due to improved service brought about by many factors, including improved track maintenance."

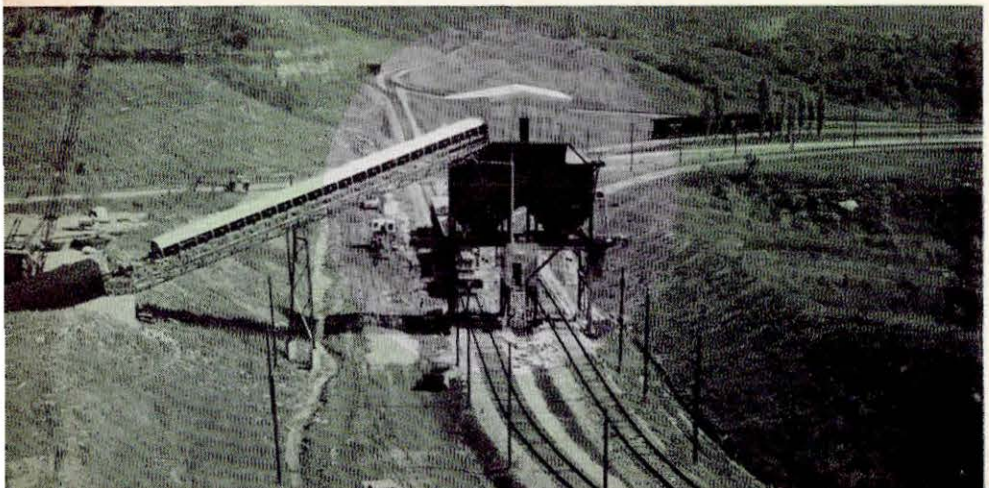
When Moore talks about improvements being made in the track structure he is also thinking about the resulting reduction in slow orders, thus speeding up the movements of trains. One result is reduced per diem on equipment, he points out. But more important is the resulting better service for shippers. "We are getting more business because we are doing a better job of handling it," he reasons.

● **Rate increase would help.** Looking at the railroad picture generally, Moore is convinced that other railroads will find it necessary to start spending more money on their tracks. Otherwise, he envisions a further decline taking place in the condition of the properties. Being cognizant of the problems involved in coming up with the larger allotments needed, he says this is one reason why a freight-rate increase is necessary.

In developing budgets that provide for present-day needs of the properties, Moore realizes that a close working relationship is needed between the operating vice president and the chief engineer. This relationship, adds Kelso, must be based on a feeling of mutual confidence. The resulting budgets are apt to be more realistic, they agree, thus giving added assurance that the vice president will be successful in selling them to top management. ■

Electrification prototype

AUTOMATION concepts differ in terminals and on main line; two tracks at loading facility make it possible to load conventional cars for another Ohio Power gener-



New coal-hauling Ohio industrial railroad gives first chance to appraise the commercial-frequency, high-voltage system in North America

By **F. N. HOUSER,** Mechanical Editor

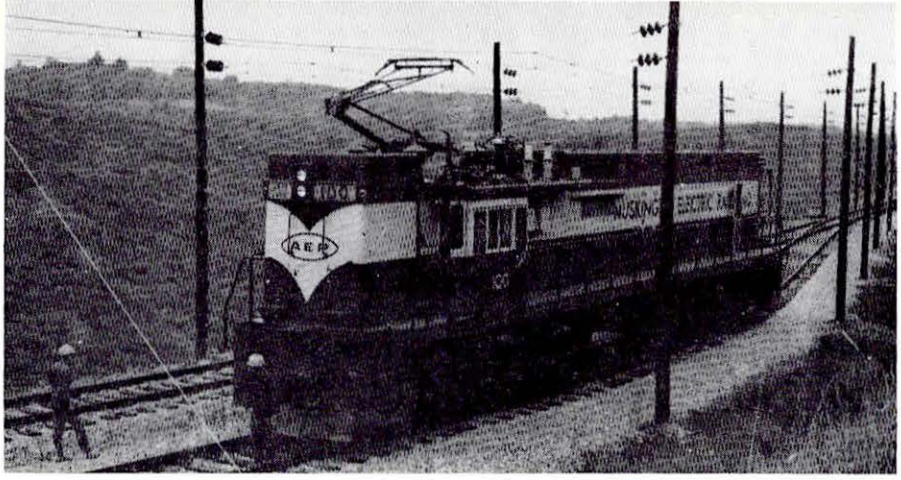
A prototype of the latest in railway technology—high-voltage, commercial-frequency electrification—is soon to begin operation as a 15-mile industrial railroad in southeastern Ohio. The coal-hauling Muskingum Electric Railroad will represent the first American application of techniques which are utilized almost exclusively in the rapidly spreading electrification of railroads in Europe and Asia.

Utilities and suppliers associated with the MERR project see it as having implications far beyond industrial haulage. With at least two major Western railroads considering main-line electrification, and with a utility-sponsored study of electrifying Penn Central's New York-Buffalo-Cleveland line continuing, developments at Muskingum take on new significance.

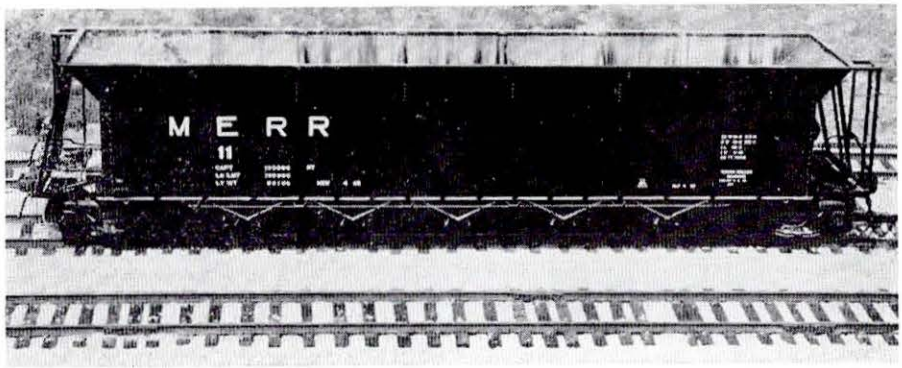
The new electric railroad has been built by a coal-producing subsidiary of American Electric Power System to link a major surface mining operation with the newly expanded Muskingum River generating station of Ohio Power.

● **What the doctor ordered:** The 25,000-volt, 60-cycle alternating current which surges through the Muskingum catenary is the power recommended for future main-line American electrification by Edison Electric Institute, utility trade association which is conducting the above mentioned engineering and economic investigations on Penn Central. Perfection of rectifiers has made it possible to use direct-current traction motors on a locomotive operating under an alternating-current catenary. The a-c traction motors in use when the New Haven, the Pennsylvania and the Virginian were first electrified could not utilize commercial-frequency (60-cycle) current.

Each of these roads, as consequence, had to build expensive substations that not only dropped utility transmission voltage to a practical distribution level (11,000 volts), but also had to incorporate rotary frequency changers to produce 25-cycle traction current from the 60-cycle supply.



RECTIFIER locomotive weighs 402,000 pounds and has continuous tractive effort of 82,300 pounds; car configuration was chosen to assure stability in operation.



● **Several advantages.** Compared with lower frequency a-c or with d-c systems, commonly in use in the U.S., the 25,000-volt, 60-cycle electrification means that there is no expensive conversion or rectification equipment at substations and that there are no special railway transmission lines. The high catenary operating voltage makes it possible to use a lighter, more economical catenary system with greater spacing between supply points.

American utilities concede that they missed a substantial market after 1945 when domestic railroads replaced all their steam locomotives. Even now, as railroads move to their third generation of diesel-electric motive power, even the most optimistic utility marketing manager will predict no immediate switch to all-electric operation. But the potential, with a demand second only to that for home heating, makes the railroads a most attractive prospective customer.

K. L. Lawson of the U.S. Department of Transportation has predicted that main-line electrification could begin in earnest by 1976 and that by 1990 there should be 20,000 miles of U.S. rail lines under catenary. Utility studies have indicated that their networks which deliver three-phase power can successfully handle railway loads which are single-phase. This has been demonstrated in France and Britain where commercial-frequency electrification is proceeding steadily.

● **Full automation.** The Muskingum railroad is also demonstrating the practicability of complete automation of a freight operation in the U.S. The crewless trains are automatically controlled, including their loading, unloading, and terminal-to-terminal operating cycles. The General Electric controls incorporate automatic speed regulation, train control, locomotive monitoring, fail-safe features, and switching. The on-board speed-distance regulator, which is internally monitored and externally directed by intermittent and continuous wayside signals, is seen as immediately applicable to a number of industrial haulage operations.

"Elements of the Muskingum automated system will be applicable on main-line railroads as the developing trend continues toward automation of sub-systems, and eventually of complete systems," says a GE spokesman.

The coal-hauling Ohio line is being teamed with the world's largest coal mining machine. The machine can remove 325 tons of earth over a coal seam at a single pass. This "mining team" is to virtually double coal output of the Muskingum mine; 3.5 million tons will move annually over MERR to the conveyors feeding the Muskingum power station.

An extension of the existing conveyor system was among the methods considered for the 15-mile coal haul. But, according to John Tillinghast, executive vice president of American Electric Power Service Corp., conveyor haulage costs were too high in regard to both capital and operating expenditures. The choice between truck and the electric railroad indicated a slight advantage for the railroad.

● **Controlling costs.** "Our decision to build the railroad was based not only on the lower cost, but also on the fact that about 75% of the total railroad cost is fixed capital costs and the 25% that remains can be fairly accurately determined," Tillinghast explains. "On the other hand, operating costs for the truck haul account for more than 75% of the total, so that higher-than-estimated operating labor costs would significantly increase total costs."

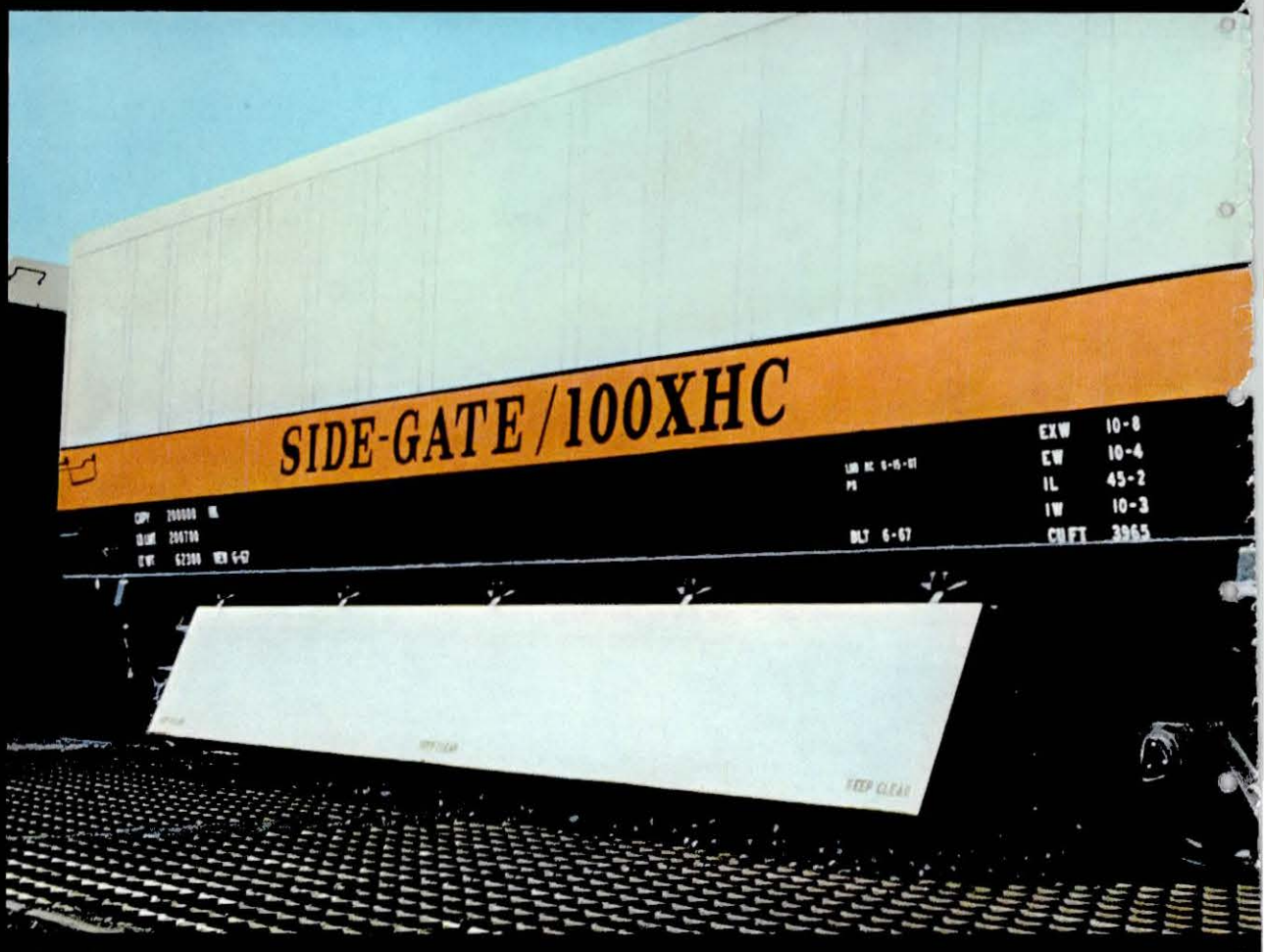
The basic cycle for handling the 18,000 tons of coal daily involves a pair of 15-car trains, each powered by a 5,000-hp Model E-50 GE electric locomotive (RA, Aug. 5, p. 24). On a two-shift basis each train will make six loaded trips daily. Trains are loaded and unloaded while moving. Loading, performed at a creep speed of 0.33 mph, is coordinated with the loading chutes. Dumping is accomplished from a 43-foot-high trestle at 3.5 to 4.0 mph with operation of hopper doors actuated by wayside control signals at two locations. The 150-minute cycle for a train involves 30 minutes for loading and 45 minutes for waiting at the loading site, the 35-minute run to the south end of the line (35 mph maximum speed), the 10-minute dumping operation, and a 30-minute return run to the loading site.

The 100-ton hopper cars, built by Ortner Freight Car Co., are of the patented Rapid Discharge design. Each has five pairs of bottom doors to maximize the opening and assure rapid unloading. Body metals are Cor-Ten and Tri-Ten alloys for corrosion resistance and high strength. All slope sheets are lined with stainless steel to assure self-clearing flow.

The car has a truck-center spacing of 44 feet 3 inches and an over-all coupled length of 56 feet 9½ inches to assure good stability, avoid undue wear on truck snubbing devices, and permit cars to be pushed without complication as they always are on the empty return trip from the unloading facility. Each car has a light weight of 63,000 pounds and a capacity of 3,650 cubic feet level full.

Door opening and closing are powered by a pneumatic cylinder, linkage and toggle principle. Doors are locked by a mechanically operated mechanism having a combination backstop and spring assists to aid in their closing. The automatic opening and closing are performed pneumatically by a separate air system, independent from the train braking equipment.

● **Motive power.** It is conceded that the 5,000-hp locomotive is not required for the Muskingum application but the



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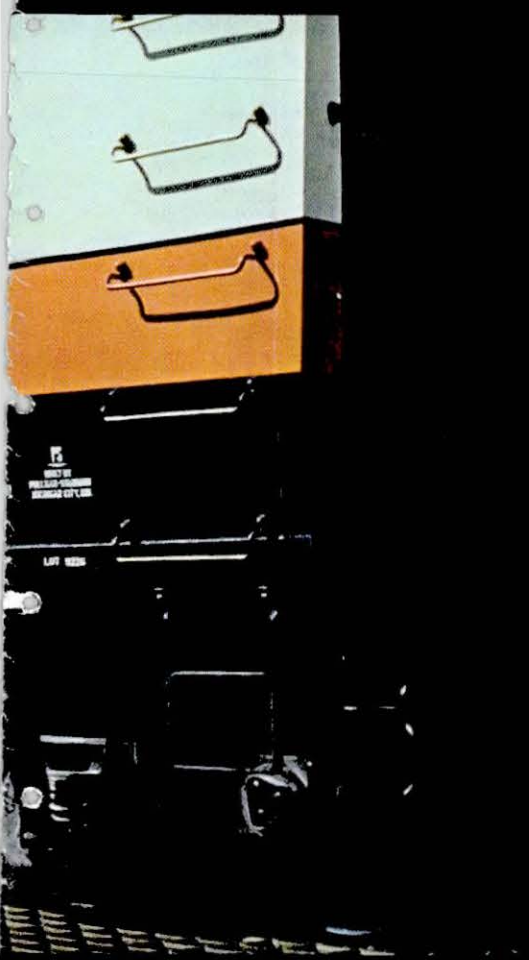

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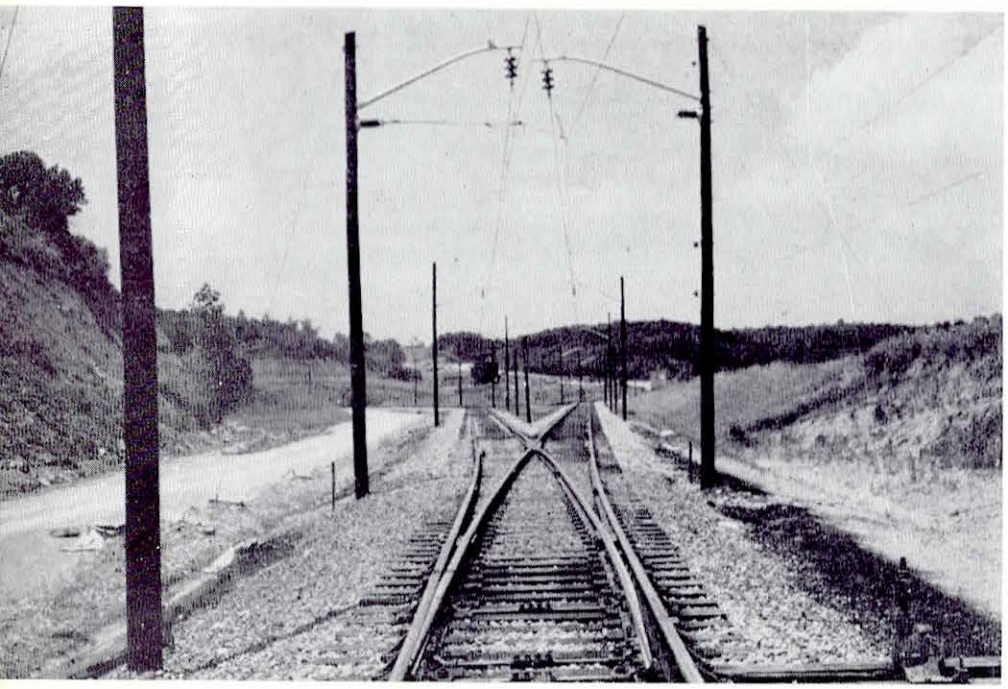
ERECTION was complicated as track and catenary work went ahead simultaneously.

CATENARY CONSTRUCTION STUDIED



LOADING-LOOP switch marks entrance to continuous automatic control section.

project gave GE an opportunity to develop a unit with solid-state rectifiers and thyristor control system which is seen as attractive for main-line freight and passenger service. In addition to being the first high-voltage, commercial-frequency electric in the U.S., it marks the introduction of a locomotive control combining transformer tap changing with silicon-controlled-rectifiers (SCRs) in the Western Hemisphere. For the first time a vacuum interrupter will be used on the primary side of the transformer.

The on-board automation package was based on GE's previous automation work, including tests on the Bay Area Rapid Transit test track in California. Two methods of control communication are utilized—continuous and intermittent. The continuous control (GE Type 52 carrier current equipment in loading and unloading areas is achieved through loop antennas on catenary masts; the intermittent control along the main line (GE Approach Position Indication) is through passive inductors installed along the track. The intermittent system provides 25-, 35- and 50-mph commands corresponding with the speed restrictions on the system. Locating the two trains on the railroad is accomplished by permanent magnet-operated reed-type limit switches mounted along the track. Status is fed to a control panel at the loading site where it is monitored by the operator who also supervises the automatic loading of the trains.

The main line is laid with 132-lb rail on creosoted hardwood ties over a 12-inch bed of ballast and a 6-inch layer of boiler-slag sub-ballast. Maximum grades against loaded movement are 1.5%. Main line curves are limited to 4 degrees; there is one 14-deg. curve in the loading loop.

● **Catenary construction.** For many years a major deterrent to American electrification has been the catenary investment; it is here that AEP and Ohio Brass have been working to develop costs based on the lighter construction which 25,000-volt a-c makes possible. Several different concepts were built into the system so they may be studied by those interested in electrifying main lines. There is even a 6,000-foot stretch of weight-tensioned catenary, a feature designed to produce a perfectly level wire under all temperature conditions and widely used on high-speed rail lines in Europe and Japan.

The fully-treated poles are spaced on 200-foot centers and are nominally 9½ feet from track center. Each pole has a curved, tapered tubular bracket much like that used for street lighting. The 4/0 copper contact wire and the 4/0 equivalent copper-Copperweld cable used as the messenger are held by three 10-inch porcelain supension-type insulators. Cross-spans support the short double-track catenary section in the loading area.

Every effort was made during erection to assure that all pole and catenary positioning was done correctly in order to reduce the need for any subsequent adjustments. The contractor installed all catenary support arm assemblies and insulators on the poles before they were set.

● **Less than ideal.** In a discussion of the Muskingum line at a recent meeting of the Institute of Electrical and Electronics Engineers it was reported that "the most ideal condition under which to build a catenary system is to have the track completed." Many portions of the new railroad were not readily accessible to highway vehicles, making it necessary to travel over the rails. Much coordination was necessary to avoid interruptions of work on the track and catenary for the single-track line as crews worked in the same area.

Ohio Brass engineers reported to IEEE that material costs for the overhead system averaged $12,150 per mile with electric bonding of the rails adding an additional $1,245 per mile. While labor costs are still being developed, they were apparently something over $20,000 per mile and are estimated to be higher than for a line where the track already existed.

The single substation for the new railroad contains a 7,500-kva GE transformer which drops Ohio Power's 138,000-volt transmission voltage to 25,000 volts for the Muskingum catenary system. ■

YARD TRACKS were undercut between overhead bridges to remove undulations caused by earlier lowering of track under bridges.

How the Missouri Pacific cut down a busy yard

Restricted clearances and the need to improve switching conditions required lowering tracks in key St. Louis yard by an average of about 12 inches.

By **R. E. DOVE,** Associate Editor

Missouri Pacific's 23rd Street Yard in St. Louis was typical of many railroad yards in this country: It needed a face-lifting. But, in this case, instead of a lift—raising the yard—the tracks had to be lowered and graded to permit high-loaded cars to pass beneath five street viaducts with ample clearance. This turned out to be a big job, estimated to cost $1,137,000. The fact that work had to be done while keeping

TRACK LOWERING was done by Ballast Cleaner-Undercutter on contract basis by Matisa.

AS THE PUBLISHER SEES IT:

ROBERT G. LEWIS

Getting drafted? The 714th can use you

Railroads of America, some 600 of them listed in the Pocket List of Railroad Officials, range from the Aberdeen & Rockfish to the Yreka & Western, and in between are the Atchison, Topeka & Santa Fe, Penn Central, and quite a few lots bigger than the Alpha and Omega (the later is *not* a railroad). No two are really alike; in fact, each one is quite different. But an operating U.S. railroad so different from any of those 600 that it isn't included in the Pocket List, is the Fort Eustis Military Railroad, at the headquarters of the Army Transportation Corps, at Newport News, Va.

The FERR (for want of an official reporting mark) is bigger than many of the 600 common-carrier railroads, but a great deal smaller than the 76 Class I's. It operates 21 miles of road and 41 miles of track. Its roster of 14 locomotives includes 5 steam engines, but none of the steamers is currently operating. There are 47 passenger cars and a fleet of 148 freight cars, of which 36 are equipped with the European screw-type couplings and buffers.

FERR has two primary functions. One is the provision of switching service for the extensive facilities at Fort Eustis. Cars are interchanged with the C&O at Lee Hall. The other function is to provide practical railroad training for military personnel. The 714th Railway Battalion runs and maintains the FERR, and is the only remaining operating Railway Battalion in the Armed Forces. The latter function, of course, explains the presence of steam power on the roster, and the rolling stock with overseas coupling devices.

The 714th has a strength of 36 officers and 471 enlisted men. It simulates a main line railway division complete with telegraph offices, block stations, and interlockings. It of course has to assume the headquarters function of a complete railway, too. It is intended to have the capability to maintain from 90 to 150 miles of road, 40 locomotives and 2,500 freight cars. There are two 75-ton rail cranes, a 7½-ton Burro, a ballast regulator, track motor cars, a weeder and a tank car for weed control. A well-maintained repair shop is equipped to handle complete diesel locomotive overhaul, and steam, too. FERR issues a working timetable, operates by the Army's Railway Operating rule book and dispatches trains in accordance with standard railway practice.

FERR has a shortage of practical railway men in its ranks. Railroaders about to enter military service would do themselves and the Transportation Corps a service if they would express their desire for assignment to the 714th to recruiting officers, and those in ROTC to their personnel officers. An interesting military assignment and excellent practical training would be their reward. Biggest shortage right now is for diesel electric repairmen and air brake men, but skills are needed in all areas of railroading.

An interesting observation: since the military establishment is perforce under pressure to cut costs, why not let railways serving military bases in the Eastern part of the country—and there are quite a number of them in the Army, Navy and Marine Corps—economize by letting the Fort Eustis Railway take over heavy diesel maintenance. Locomotives could be shipped economically on their own wheels to and from Fort Eustis, even perhaps on a unit exchange basis. Capabilities of this railway are far in excess of present demands on it, and the 714th is eager, willing and able.

the yard operable added to the cost.

The 23rd Street Yard, lying in an east-west plane, is a flat-switching yard. Since St. Louis is MP's gateway to the North and East, the yard is an important one, one of the busiest in the St. Louis area. It receives trains from the road's Dupo Yard across the Mississippi River, as well as from the Terminal Railroad Association of St. Louis on the west side of the river. All trains enter the 23rd Street Yard at its east end. Its primary function is to make up trains with loads destined for the West.

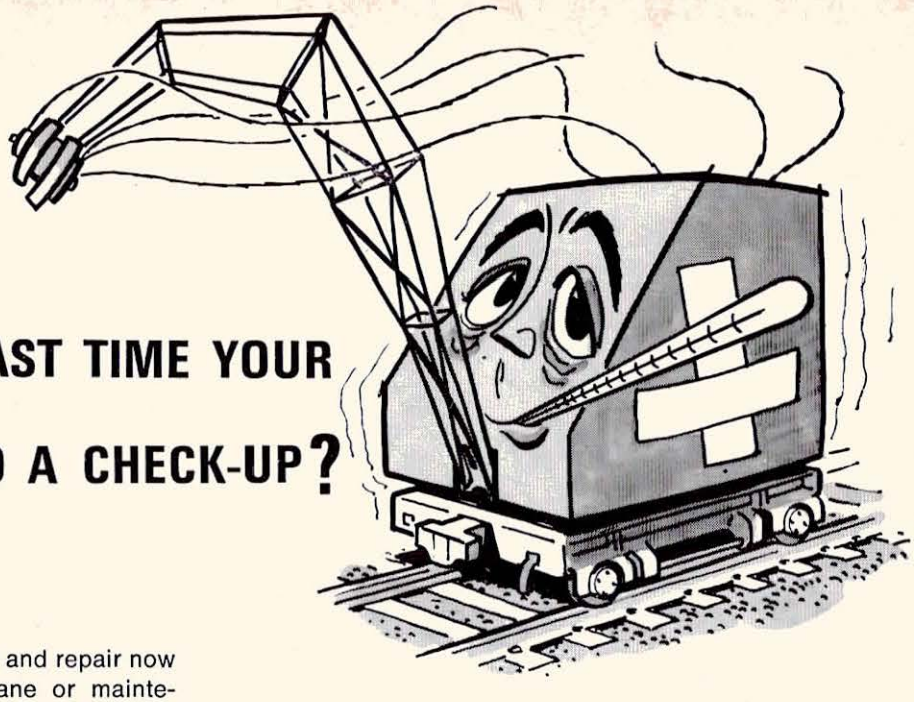
• **Humps hinder switching.** Over the last 40 to 50 years, much effort has been expended in maintaining the yard. Much of this work consisted of raising and surfacing the tracks, renewing weak ties and replacing turnout materials. In doing this work, the tracks could not be raised under the five viaducts because of limited clearances. The end result was a series of humps in the tracks between viaducts, making it difficult to switch cars.

Also, in raising the tracks and walkways between tracks, the drainage system became covered with ballast and car droppings, and was made ineffective. The resulting lack of proper drainage created maintenance problems. To make matters worse, the yard lies in Mill Creek Valley where water can run into the yard from both directions.

Although tie condition in this yard was relatively good, the light rails and other track materials were worn out. The ballast used in past maintenance consisted of materials that were available at the time—chats, gravel, limestone chips and mine tailings—all of which had become contaminated and ineffective. It was felt that further patching by adding good material to bad would be uneconomical.

• **A big job.** The decision was made to undertake a general overhaul of the yard to include removal of the contaminated ballast and the lowering of tracks sufficiently to restore uniform grades and provide enough clearance beneath the overhead structures for today's high loads, as well as to allow some leeway for future track raising. While this work was being carried out, MP also planned to restore the drainage system. In addition, the light rail would be replaced with 112-pound welded relay rail and the turnouts with 112-pound material. When lowered, the tracks would be on a 0.35% grade, descending to the East.

To accomplish these objectives, plans called for beginning work on the southernmost track. Then, taking one track at a time, work was to progress toward the north side of the yard where the main tracks are. The first phase of the project was to lower the tracks an average of 1.0 foot to place them on an average 0.35% grade. While each track



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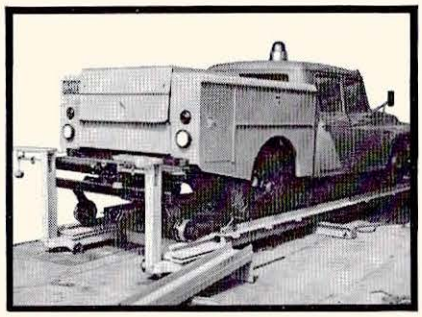

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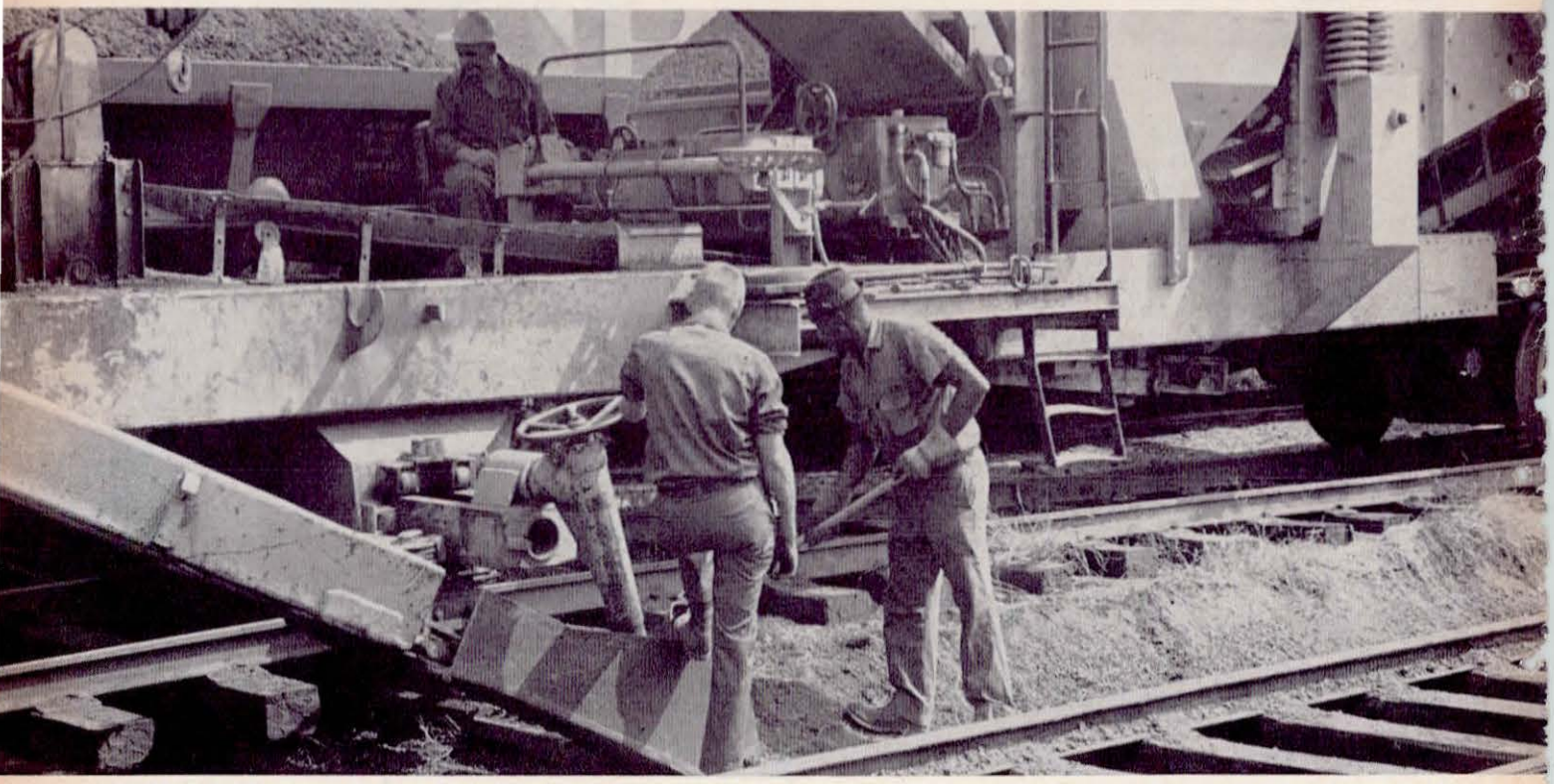
was thus skeletonized, the necessary tie renewals would be made.

After the track was lowered to the desired level, the plans called for ballast to be spread and the track raised, surfaced and lined. Meanwhile, the drainage system was to be uncovered and the pipes cleaned and opened up. After all tracks had been lowered, the rail would be relaid and the turnouts replaced with good material. This involves 137 turnouts, four diamond crossovers and interlocking plant, as well as a double-track switching lead at the east end and a triple-track lead at the west end.

Undercutting work was carried out by a Matisa Ballast Cleaner-Undercutter, which was furnished on a contract basis by Matisa Equipment Corp. Personnel provided by the contractor for the operation, maintenance and repair of the machine consisted of a superintendent and three men. A work train and 30 air-dump cars, each having a capacity of 40 cubic yards, were used in conjunction with the undercutter. Working ahead of the machine, a foreman and four laborers jacked up the track to loosen the compacted ballast in the cribs.

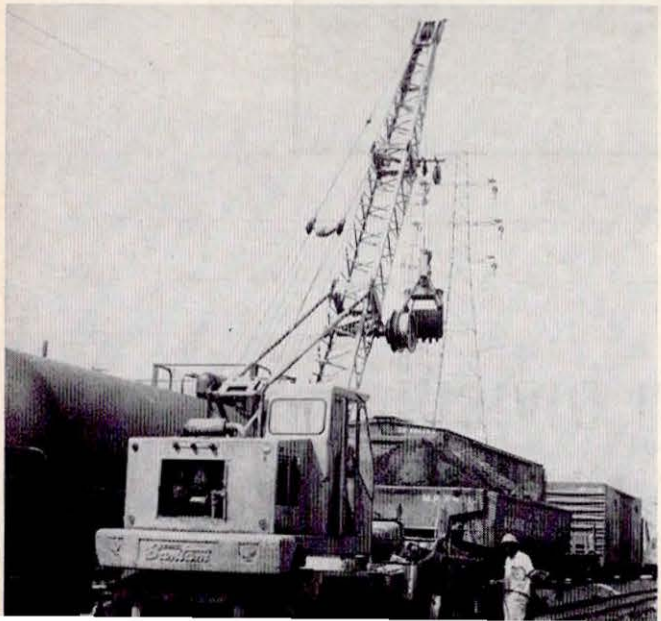
● **Must switch industries.** The undercutting work was begun June 17 on the southernmost track, known as the Back Track. This is the busiest track in the yard as it handles the through freight trains and has the most turnouts which serve industries. Work on this track was divided into three sections so that switching service to the industries could be conducted without too much interference to the track work. The through freight trains used a nearby yard track until work on the Back Track had been completed.

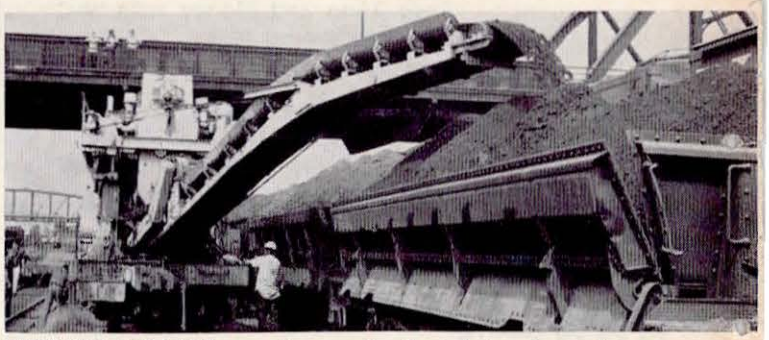
The undercutter cut about 12 inches deep beneath the ties on each pass and loaded the excavated material directly into a string of 15 air-dump cars on



DEPTH OF CUT averaged about 12 inches beneath the ties. For one track it was necessary to go as deep as 2.5 feet below the ties.

DIGGING GIVES THE MP AN UPGRADED YARD





EXISTING BALLAST was too contaminated to clean. It was loaded into air-dump cars and hauled out of town for disposal.

MATERIAL BETWEEN TRACKS was excavated by a crane. The old drainage system was cleaned and restored to service.

an adjacent track. When these were fully loaded, the work train set the cars out, coupled onto another string of empty air-dump cars and got back into position for loading by the undercutter.

The machine made as many passes as necessary to lower the track the desired amount. After the undercutter was through work for the day, the same work train hauled all loaded cars about 15 miles out of town and unloaded them.

To permit the undercutter to work through turnouts, the switch ties were removed just ahead of the machine by a gang of 12 men. Temporary crossties were installed to maintain track gauge through each turnout while the undercutting work was being done—otherwise, it would have been necessary to do the undercutting through switches by hand. The switch ties were replaced after the undercutting.

As soon as work on the Back Track and industry leads had been completed, work was continued on the next track north so turnouts and crossovers on this track could be restored to service. It was necessary to maintain service as long as possible to a track scale at the west end of this track, so the work was carried out in two track sections, as permitted by crossovers.

About six weeks were required to undercut the Back Track because of the large number of turnouts involved.

The progress here was about 600 feet of track undercut per day. After completing that track, the work was speeded up to a production rate of about 1,800 feet per day. It is anticipated that all undercutting will be completed in the yard late in November.

The area between tracks that could not be reached by the undercutter was excavated and loaded by a Shield-Bantam on-track crane equipped with a clamshell bucket.

● **Drainage work.** A bridge and building crew handled the uncovering and cleaning of the underground drainage system.

It also spotted and marked the drain risers so the machines would not damage them. Care also had to be exercised to preserve intact two city sewer lines that underlay the yard.

As quickly as the undercutting work had been completed on a section of track, a nine-man surfacing gang unloaded crushed-stone ballast and raised the track to grade stakes, then surfaced and lined it. This crew was equipped with a Jackson Utility Tamper with jacking attachment, a Jackson production tamper and a Kershaw Ballast Regulator. Between tracks, walkways for trainmen were surfaced with chats.

Plans are to undertake the rail laying and turnout-renewal work in the yard as soon as MoPac's system rail gang completes its on-line seasonal work. ■

Frank Malone

WATCHING WASHINGTON

NEW HEADS, OLD HANGOVER —New heads on the Hill will suffer from an old hangover—transport chaos. Indications of how hard transportation issues will hit the new Administration may be gleaned from considering modal desires.

AIRLINES WANT MORE RUNWAYS —Shortly before the 90th Congress closed, the FAA dropped schedule limits on the airlines for high-density airports. A sign of cascading congestion, the limits were accepted as a temporary ploy. Airline managers will go for a $6-billion airport expansion and a $150-million-a-year control overhaul. Financing would come from a proposed Air Development Trust Fund (2% tax on domestic tickets and $2 per overseas ticket) and from establishment of broad user charges. The expansion program would benefit air freight operations, too.

TRUCKERS WANT MORE TRAILERS —The House ignored to death an almost-breathing bill that would have let states decide whether a truck could pull more than one trailer over a state's own part of the Federal highway. Truckers presumably will pursue a new size-and-weight bill, if it's as vital as they claim. Also, they'll oppose proposed permission for freight forwarders to make contract rates with railroads and removal of ICC control over minimum rates on rail bulk commodities. As for the waterways, they want a single set of rules for navigation of U.S. waters, clear protection from over-liability in any water pollution act, and defeat of proposed user charges for inland waterways. And they could use help getting started on the inter-modal route.

RAILS WANT MORE EQUITY —AAR President Thomas M. Goodfellow says over and over again the railroad industry wants to win equity in transportation policy on taxes, subsidies and regulation and to gain diversification not only in inter-modal terms but in conglomerate terms. "Railroad investment in non-transport fields may be the salvation of our industry until some fairness and sense are brought into governmental policy," he says.

ALL NEED NEW RULES —All that's certain is that each mode will fight hardest for its own interest. But such fighting will produce more headlines than legislation. For the conflicts to produce a healthy, balanced transport system, there's one last need. M. Cecil Mackey, Assistant Secretary of Transportation for Policy Development, says the incoming Administration should launch ". . .a comprehensive review of our entire scheme of transport regulation."

Africa is betting on the new

That's welded rail—and concrete ties—they're putting down in Rhodesia. Plainly, they think trains are here to stay! And why not? Check it out . . .

☐ **Roadway.** A single track of a double-track railroad can carry the load of an estimated 10 to 20-lane highway, if you can imagine such a monster.

☐ **Power efficiency.** Cubic inch for cubic inch, a giant railroad diesel's factor of cylinder wall friction is only about half that of a typical truck engine.

☐ **Rolling ease.** Nothing travels so easily as a steel wheel rolling on a steel rail. A highway tire strongly resists flexing (try pushing a car or truck).

☐ **Automation.** Transportation automation, like factory automation, depends on *guided movement.* Scientists struggle to develop a practical guidance system for cars and trucks. Guiding trolleys, perhaps. Maybe electronic

railway age

guidelines buried under the pavement. *Guidance is built into trains with the rails they ride on.*

☐ **Manpower needs.** They're low on a railroad, with its multiplicity of towed cars—compared with the driver-for-every-unit case of highway trucks.

Actually, if the train had come along *after* the car, truck and plane, it would have been hailed as a great advance! That's why—all over the world—the betting is heavy on railroads.

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Duties consist of the proposal and specification of various peripheral devices for medium size computers that are to be used in Sylvania Transportation Control Systems. Knowledge of computer application, data communication requirements and peripheral interface requirements are necessary. The candidate must have experience in the hardware integration of systems. You will be required to configurate control systems, using ready-made subsystems, for particular application to railroad yard control and truck terminal control. Precise knowledge of processing control computers and their application is required.

sr. systems analyst

The candidate must be capable of defining systems for automatic car identification. Must be familiar with computer applications for railroads, data communications and railroad signaling. Extensive background in railroad systems is mandatory. Experience must include the application of computer data systems in railroading. Any experience in the application or planning of automatic car identification in mainline operation or railroad yard terminal operations is highly desirable.

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RAILWAY BOOKSHELF

Here's a most timely book. It examines the concern of a variety of interest groups with federal policy toward the railroads. "American Railroad Politics, 1914-1920—Rates, Wages and Efficiency" (University of Pittsburgh Press, Pittsburgh, Pa., 250 pp., $7.95), concentrates on the crucial years before enactment of the Transportation Act of 1920. The author, K. Austin Kerr, is a member of the history department at the Ohio State University. "In this study," Dr. Kerr says, "I have attempted to part with the tradition which has dominated accounts of the railroad industry during the time of World War I. . . Rather than making judgments which would be a half century too late to be useful, I have instead concentrated on arriving at an understanding of the human, political relationships among the men then concerned with railroad matters."

•

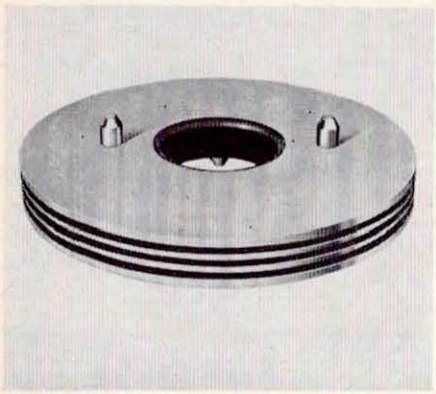
Love for the steam locomotive is not something that came into existence just recently. Listen: "The locomotive engine is the most beautiful mechanical construction of this or any other time. We watch it under steam from a distance, from meadows where in the sun the cattle graze, and it seems to fly as the swallows fly—skimming above the horizon, and presently we see its colossal form crossing the mighty arches which span the valley of the river. Then we on the platform shrink from it aghast as it rushes past in the full thunder of its power, and, straining on its course like some mighty monster broken loose, it is an object of intense and almost passionate interest. Hence it is that volunteers are never wanting among us for the wild-like life of the rail."

That's the very beginning of "The Engine-Drivers' Friend," which originally appeared in 1880. The author, Michael Reynolds, was an engineer and locomotive inspector for the London, Brighton & South Coast Railway. The present edition—an edited facsimile reproduction (Hastings House, 10 East 40th Street, New York, 72 pp., $3.50), will be of interest to the general reader as well as students of railroad and social history. The volume is enhanced by engravings of the events, scenes and devices of the period.

•

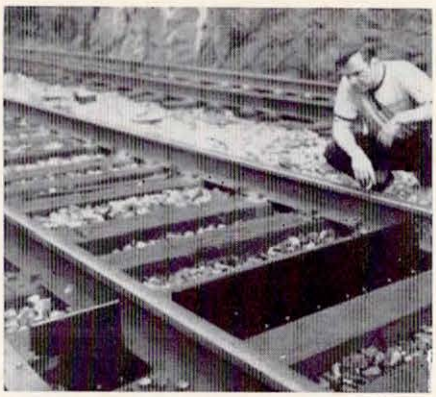
Managerial aspects of all components of physical distribution management are focused upon in Dr. Charles A. Taff's "Management of Traffic and Physical Distribution" (Richard D. Irwin, Inc., Homewood, Ill., 518 pp., $12). The expanding role of the physical distribution manager in the business structure is thoroughly discussed. It is the author's feeling that a fundamental understanding of traffic and transportation provides a logical basis for integrating physical distribution functions. "Transportation is the most costly component," he says in the preface, "and its interfacial relationships to the other elements provide a nucleus for the grouping of functions. The traffic manager has long been responsible for the physical flow of materials into the production line and from the production line to warehouses and/or customers. . . . The coalescing of all the functions of physical distribution management can optimize the efficiency of management and improve customer service." **—F.C.M.**

NEW PRODUCTS REPORT



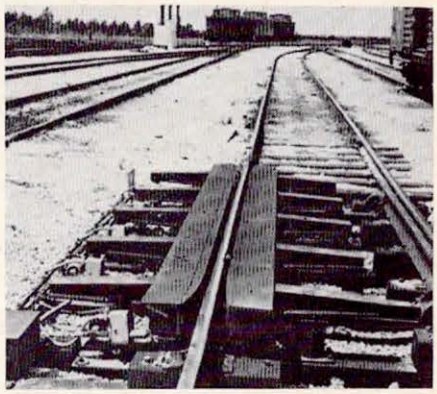
Caboose-noise control (RA-1)

A railroad caboose can be as quiet as the interior of a first-class jet plane. Controlling caboose noise calls for adoption of a rubber-metal center bearing to isolate truck noise and vibration from the crew's quarters, plus application of elastomeric damping treatment to caboose interiors. Developments like these have just been announced. One of them —the rubber-metal center bearing—isolates vibration and shock normally transmitted via the center plate to excite vibration in the caboose components and panels. The bearing has the secondary benefit of producing more consistent car turning characteristics. There are no metal-to-metal surfaces to create dry bearing problems. Damping treatment involves application of elastomeric damping material to the interior of caboose panels to dampen any residual vibrations. The material can be applied by brush, roller or airless spray techniques. *Lord Mfg. Co.*



Drag detector (RA-2)

A new bi-directional, self-restoring dragging-equipment detector is easily installed, and has a blade height adjustment to suit various rail sizes from 110 to 155 lbs. The Model 8100 is tie-top mounted. Detector blades can be easily replaced if damaged. The sensing and control mechanism is designed to eliminate "false alarms" caused by wind pressures. Centering torque of the detector is adjustable from 100 lb to 800 lb. *Servo Corp. of America*



Retarder (RA-3)

A new adaption of the standard model 50B retard-all retarder, designated the Model 50B1, is a weight proportional retarder for handling 160-ton cars. It has essentially the same appearance as the 50B, but is operated by a captive supply of nitrogen gas in areas where an air supply is not readily available. The manufacturer states that this model 50B1 retarder is designed for use in medium density yards. *WABCO, Signal & Communications Div.*

Reed switch (RA-5)

Miniature printed circuit correed is compatible with high density packaging demanded by the computer industry. Terminals are mounted on multiples of 0.050-in. centers to match circuit board grids. Magnetically shielded coils permit close spacing of modules. Each reed switch consists of two over-lapping ferro-magnetic blades sealed in a glass capsule. They are plated with rhodium over gold at the contact area. *Automatic Electric Co.*

Locomotive speed control (RA-4)

A new hump locomotive speed control system will automatically control and regulate the speed of a locomotive through wide ranges of variable load conditions; and while pushing cars up to and over the crest of the jump in classification yards. This system operates with existing electrical and safety control circuit on the diesel engine and main generator without changing manual controls in the cab. The system can also be used for loading and unloading systems. *WABCO Signal & Communications Div.*

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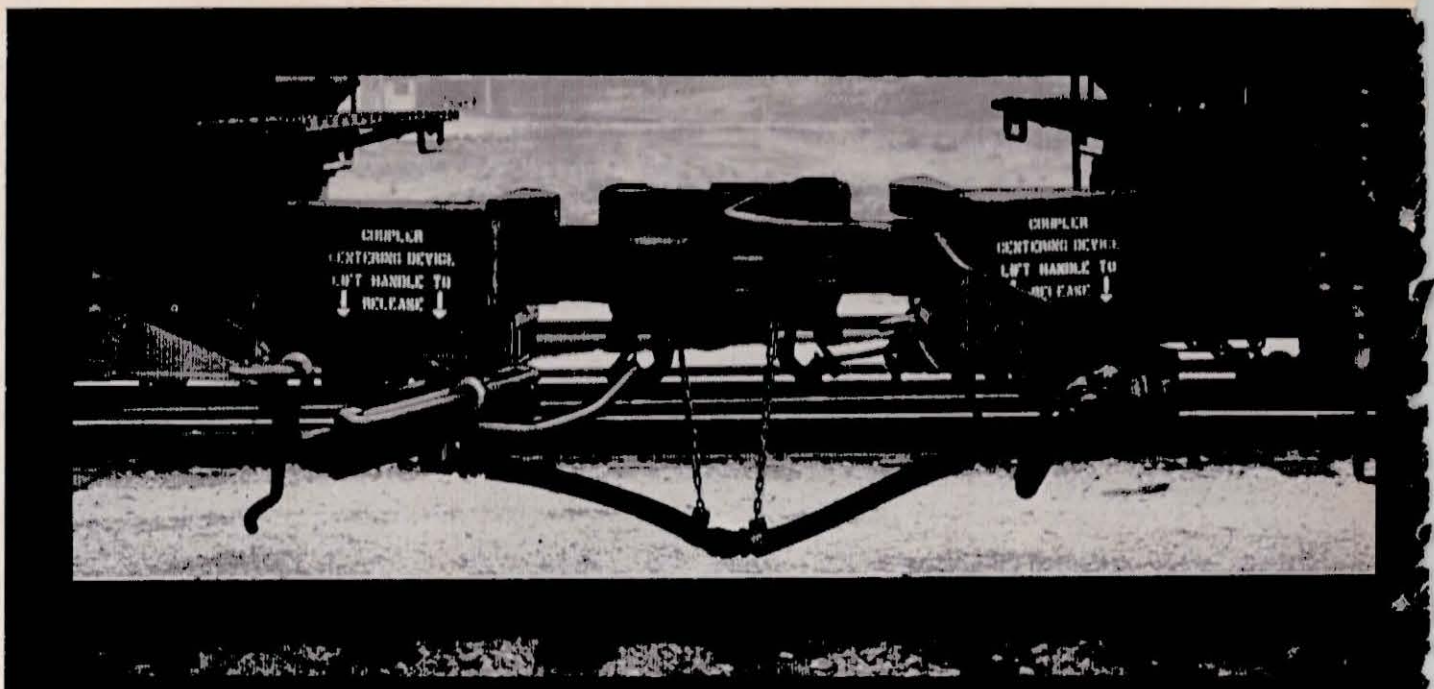

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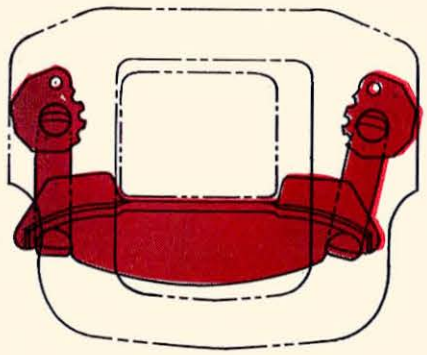
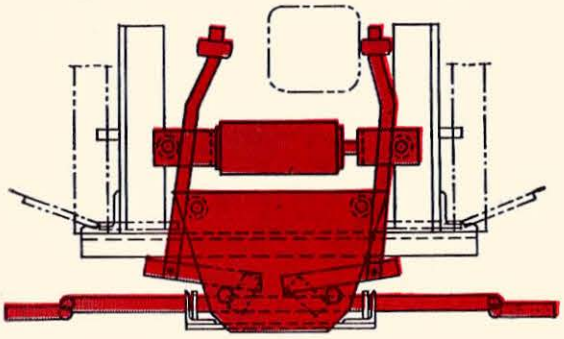
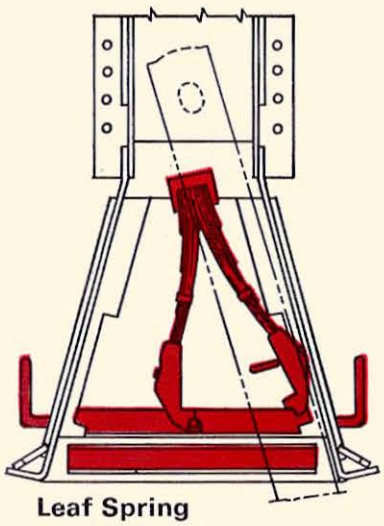


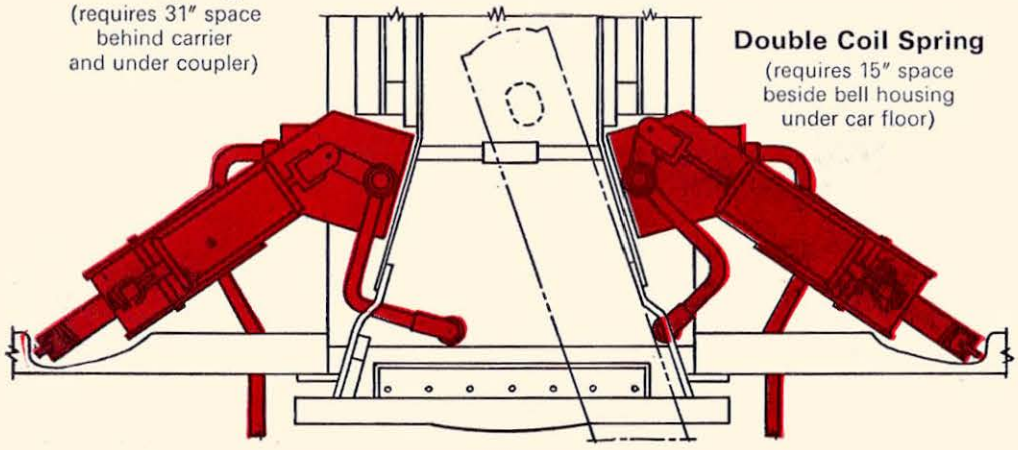
Swing Type
(includes carrier)



Single Coil Spring
(requires 6" space
behind carrier and under coupler)



Leaf Spring
(requires 31" space
behind carrier
and under coupler)



Double Coil Spring
(requires 15" space
beside bell housing
under car floor)

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In using a wide-swing coupler device, there will be occasions when coupler alignment requires that a free coupler be moved off center. If so, a pull on the handle releases the centering device. As the cars move, and the coupler returns to center position, the device automatically re-engages.

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PEOPLE IN THE NEWS

BANGOR & AROOSTOOK.—Charles S. Burgess, general foreman, Millinocket, Me., promoted to master mechanic—system, a newly created post. Mr. Burgess has been succeeded by **Vernon T. Wark,** Mr. Burgess will act as traveling supervisor for maintenance of equipment throughout the system.

BURLINGTON.—Robert L. Watson, manager of fuel traffic sales, named assistant to vice president-traffic, Chicago. **Jean T. Lacy,** district sales manager-animals and products, Galesburg, Ill., named to the newly created position of manager-special projects for the freight sales department, Chicago. **John D. Round** appointed manager-export/import and trailer-container-on-flat-car sales. **Elmer E. Crossan,** assistant manager of merchandise traffic, becomes manager of forwarder and trailer-container-on-flat-car sales.

Wallace P. Heller, formerly manager of freight claim prevention, **Penn Central,** named senior cost analyst, **Burlington,** Chicago. **Richard F. Kornman,** industrial marketing analyst, named assistant director of quality control, equipment planning and utilization, Chicago.

S. Tropino, diesel material supervisor, Chicago, advanced to inventory control planner there succeeding **R.K. Wiley,** promoted to assistant general purshasing agent (RA, Oct. 28, p. 70).

ERIE LACKAWANNA.—Milford M. Adams, assistant comptroller, Cleveland, elected secretary-treasurer, succeeding **George C. Frank,** who retired Nov. 1, after 45 years of service.

Bruce W. Nyland appointed assistant engineer maintenance of way, Scranton, Pa.

Neil A. Mitts, division sales manager, Jamestown, N.Y., and **Howard A. Whitney,** district sales manager, Philadelphia, retired Oct. 31 after 43 and 41 years of service, respectively.

GRAND TRUNK WESTERN.—H. D. Gibson, superintendent of the Port Huron Car Shops named to the newly created post of manager-TOFC, containerization and merchandising.

William H. Calladine, shop superintendent, Battle Creek, Mich., appointed mechanical officer-motive power there, to replace **William Leys,** retired. **Robert F. Fiandt,** assistant superintendent of shops, Battle Creek succeeds Mr. Calladine.

GULF, MOBILE & OHIO.—Roy J. Fischer appointed general passenger agent, St. Louis, Mo.

ILLINOIS CENTRAL.—H. D. Granberry, Jr., superintendent, Mississippi division, Vicksburg, Miss., transferred to the St. Louis Division, Carbondale, Ill., to succeed **H. R. Koonce,** retired. Mr. Granberry's successor is **J. M. Law,** assistant superintendent, St. Louis division, Carbondale, who in turn is succeeded by **C. W. Diamon,** trainmaster, Chicago division, Markham Yard. **T. D. Hancock,** trainmaster, Chicago division, Congress Street, Chicago, replaces Mr. Damiano. **S. B. Powell** transferred from Carbondale to succeed Mr. Hancock. **E. L. Pearson,** trainmaster, Jackson, Miss., replaces Mr. Powell, and in turn is replaced by **C. H. Randall,** transferred from the Chicago division, Markham Yard. **R. L. Koonce** succeeds Mr. Randall. **G. M. Biscan,** trainmaster, East St. Louis, Ill., becomes assistant superintendent, St. Louis division there. **J. L. Turnlund** named to succeed Mr. Biscan.

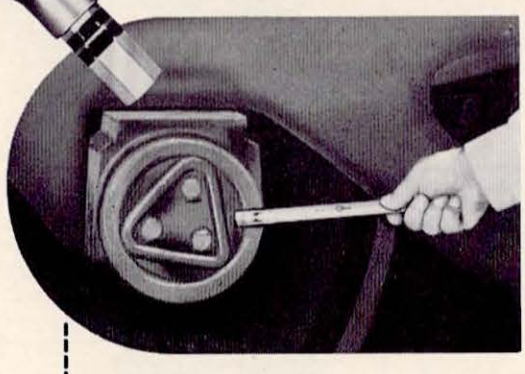
LEHIGH VALLEY.—William H. Coachys, assistant freight traffic manager, Buffalo, N.Y., appointed TOFC traffic manager, New York, succeeding **John H. Schmid,** superintendent—piggyback who retired Oct. 31 after 46 years of service.

General agents appointed: **James J.**

(Continued on page 37)

Markal® THERMOMELT® TEMPERATURE INDICATOR

pinpoints overheated journal boxes . . .



Touch a Thermomelt Stik to a journal box and if it melts, the temperature is 200° F. or above. The electronic detector indicates that a journal box is overheating. The journal box in question can be immediately checked with a Thermomelt Stik as a double check on the electronic "hot box" detector. Thermomelt comes in a stainless-steel holder with a pocket clip which makes it easy for anyone to carry.

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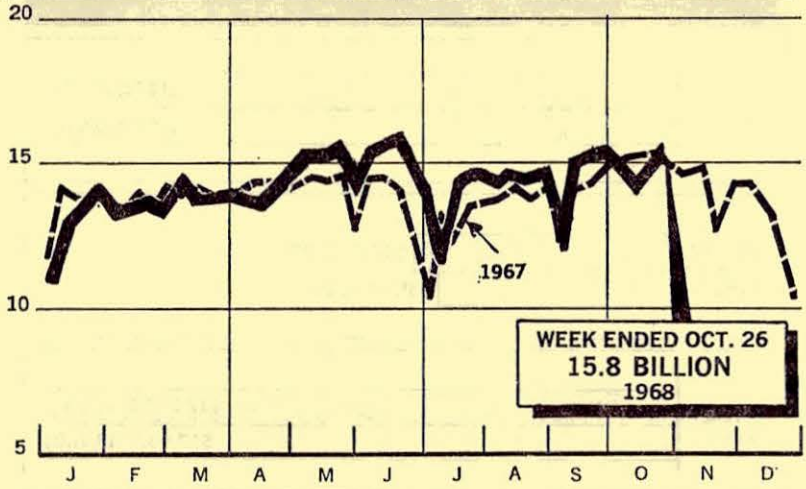
Circle 14 on coupon page 29

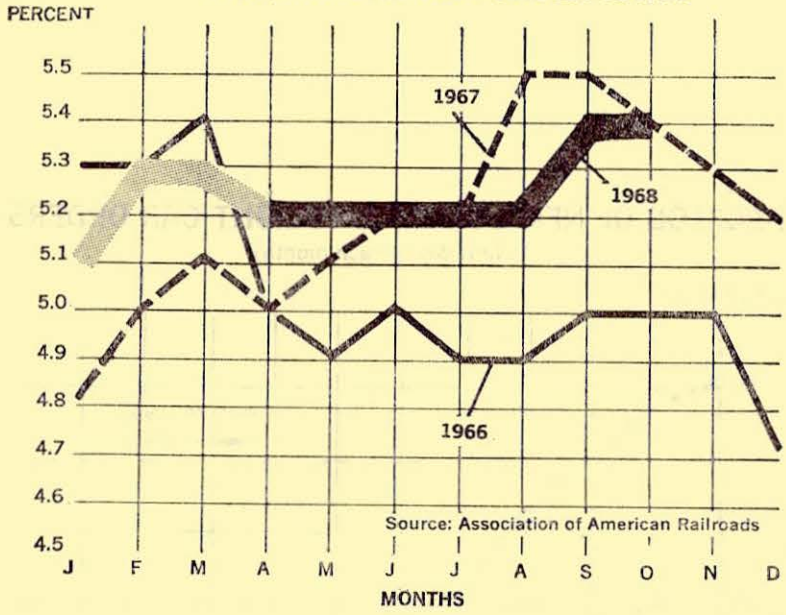
RAIL FREIGHT TRAFFIC TRENDS

BILLION TON-MILES (Estimated)



Source: Association of American Railroads

FREIGHT-CAR BAD-ORDER RATIO

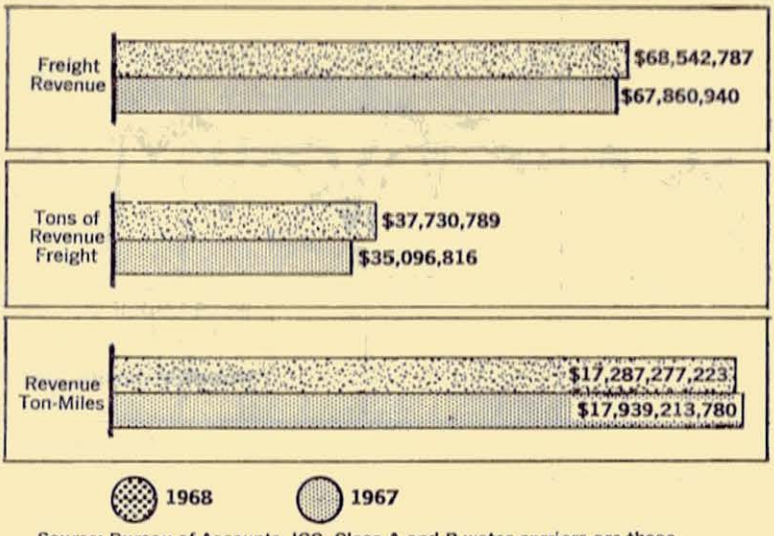


Current Statistics

Net income, Class I roads	
Six months, 1968	$284,000,000
Six months, 1967	$265,000,000
New freight cars on order	
Oct. 1, 1968	16,224
Oct. 1, 1967	24,762
New freight cars delivered	
9 months, 1968	43,062
9 months, 1967	66,451
Serviceable cars	
Oct. 1, 1968	1,386,742
Oct. 1, 1967	1,415,518

CLASS A and B WATER CARRIERS

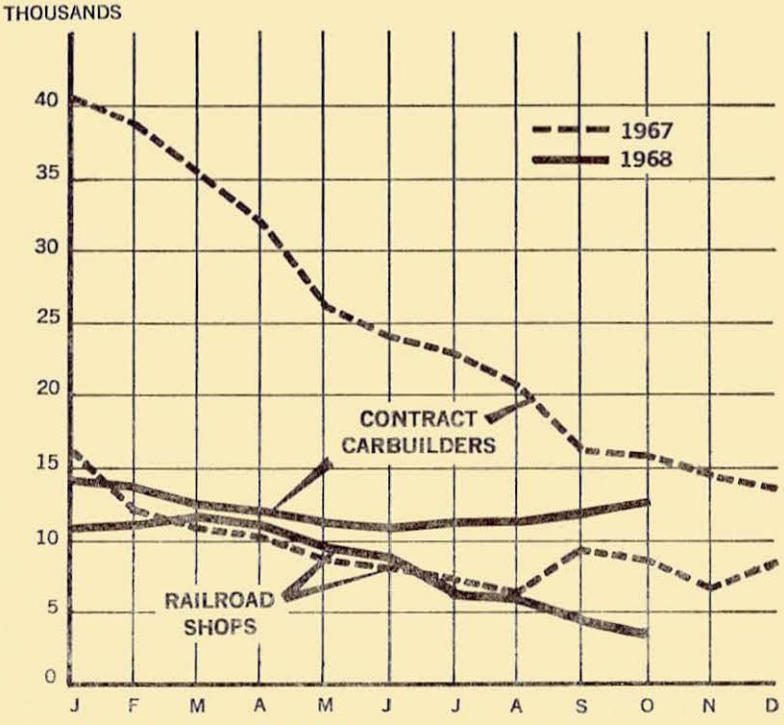
SECOND QUARTER REVENUE AND TRAFFIC 1968 vs. 1967



Source: Bureau of Accounts, ICC. Class A and B water carriers are those having, respectively, operating revenues exceeding $500,000 and exceeding $100,000 but less than $500,000.

BACKLOG OF NEW DOMESTIC FREIGHT CAR ORDERS

(On first day of each month)



Source: American Railway Car Institute.

MARKET OUTLOOK

CARLOADINGS

Loadings of revenue freight in the week ended Nov. 2 totaled 611,819 cars, the Association of American Railroads announced on Nov. 8. This was an increase of 14,385 cars, or 2.4% compared with the previous week; an increase of 36,267 cars, or 6.3%, compared with the corresponding week last year; and a decrease of 1,932 cars, or 0.3%, compared with the equivalent 1966 week. Ton-miles generated by carloadings in the week ended Nov. 2 are estimated at 16.2 billion, an increase of 9.6% above the corresponding week of 1967, and 6.4% above the 1966 week.

REVENUE FREIGHT CARLOADINGS
For the week ended Saturday, Nov. 2

District	1968	1967	1966
Eastern, including Allegheny and Pocahontas	229,567	223,864	244,900
Southern	132,193	118,187	116,926
Total Eastern and Southern Districts	361,760	342,051	361,826
Northwestern	78,161	78,183	82,712
Central Western	126,584	115,065	125,205
Southwestern	45,314	40,253	44,008
Total Western Districts	250,059	233,501	251,925
Total All Roads	611,819	575,552	613,751
Commodities:			
Grain and Grain Products	57,256	51,605	62,149
Livestock	2,872	3,672	4,158
Coal	111,010	109,660	119,584
Coke	7,388	7,370	8,055
Forest Products	46,760	38,304	37,454
Ore	33,844	38,601	40,656
Merchandise l.c.l.	4,407	4,534	6,421
Miscellaneous	342,781	321,726	335,274
Nov. 2	611,819	575,552	613,751
Oct. 26	597,434	592,495	644,078
Oct. 19	561,854	589,883	623,917
Oct. 12	531,104	583,993	636,542
Oct. 5	568,397	582,619	621,031
Cumulative total, 44 weeks	24,013,480	23,903,841	25,280,000
Estimated revenue ton-miles (billions) 44 weeks	633.5	611.2	630.3

PIGGYBACK CARLOADINGS

U. S. piggyback loadings for the week ended Oct. 26 totaled 28,346 cars, carrying 46,365 trailers, compared with 26,209 cars, carrying 42,512 trailers, in the corresponding 1967 week. Loadings for 1968 up to Oct. 26 totaled 1,109,400 cars, carrying 1,806,856 trailers, compared with 994,210 cars, carrying 1,634,729 trailers, in the corresponding period of 1967.

IN CANADA

Carloadings for the seven-day period ended Oct.. 21 totaled 79,228 cars, compared with 75,171 for the previous seven-day period, according to the Dominion Bureau of Statistics.

	Revenue Cars Loaded	Total Cars Rec'd. from Connections
Totals for Canada		
Oct. 21, 1968	79,228	24,047
Oct. 21, 1967	77,314	23,031
Cumulative Totals		
Oct. 21, 1968	3,021,608	991,760
Oct. 21, 1967	3,090,334	1,002,200

FREIGHT-TRAIN CARS

• *Canadian Pacific.*—Ordered 74 60-ft-9-in. box cars from Pullman-Standard at an approximate cost of $1.4 million. Seven of the cars will be of 100-ton capacity and 67 will be of 70-ton capacity. Deliveries are to begin in December.

• *Gulf, Mobile & Ohio.*—Ordered 200 70-ton box cars from Pullman-Standard at a cost of $2.7 million.

• *Seaboard Coast Line.*—Ordered 1,200 50-ft, 70-ton capacity box cars from Pullman-Standard at a cost of $18.5 million. Of the total order, 500 cars will be of the cushioned end sill type and the remaining 700 will be for general freight service. Delivery will begin in December and is to be completed in the spring of '69. The cars will be built at Bessemer, Ala.

• *Pacific Fruit Express.*—Ordered 1,200 50-ft, 70-ton, 4,000-cu-ft-capacity multi-purpose mechanical refrigerator cars from Pacific Car and Foundry for delivery by the end of May 1969. The order will bring PFE's total mechanical refrigerator fleet to almost 10,700 cars. The cars will have 10½-ft-wide doors.

CAR OWNERSHIP

• *Serviceable cars.*—Revenue freight cars in serviceable condition owned by Class I railroads on Oct. 1 totaled 1,386,742, compared with 1,415,518 on Oct. 1, 1967, according to most recent AAR Car Service Division report. Estimated total ownership of all railroad- and privately-owned freight cars on Oct. 1 (see table below), was 1,803,777 (average capacity: 63.90 tons), compared with 1,829,101 (estimated capacity: 62.46 tons), on Oct. 1, 1967.

ESTIMATED OWNERSHIP—ALL REVENUE FREIGHT CARS
(Oct. 1, 1968 vs. Oct. 1, 1967)

		Box	Covered Hopper	Gondola	Hopper	Flat	Refrig.	All Others	Total
Class I	1968	553,573	122,859	199,001	413,299	67,753	52,348	56,877	1,465,710
	1967	574,153	118,490	203,317	423,142	66,582	51,097	59,409	1,496,190
RRO&C Refrig.*	1968	0	0	0	0	0	48,981	0	48,981
	1967	0	0	0	0	0	51,839	0	51,839
Private	1968	1,246	28,207	286	3,833	41,550	15,407	172,737	263,266
	1967	1,251	26,907	654	1,926	38,887	14,272	171,072	254,969
Class II & S&T†	1968	9,084	889	5,071	8,307	590	789	1,090	25,820
	1967	9,235	850	5,321	8,305	659	618	1,115	26,103
GRAND TOTAL	1968	563,903	151,955	204,358	425,439	109,893	117,525	230,704	1,803,777
	1967	584,639	146,247	209,292	433,373	106,128	117,826	231,596	1,829,101

*Railroad owned and controlled refrigerator car lines.
†Class II railroads and switching and terminal companies.

CAPITAL EXPENDITURES

• *Union Pacific.*—Motive-power and freight-car-program for 1969 will involve expenditure of more than $105 million. Included will be orders for 25 6,600-hp diesel-electric locomotives from EMD; and for more than 4,300 new freight cars. On UP's list will be 2,000 box cars, 500 flat cars, 600 gondolas, 400 covered hopper cars, 300 open-top hopper cars.

YOU OUGHT TO KNOW

Penn Central's "Jersey Arrows" off to fast start

New Jersey now claims the nation's fastest commuter service. The new government-financed "Jersey Arrow" cars, operated by the Penn Central, went into revenue service Oct. 30. On the first day of service, the scheduled travel time of 52 minutes for the 58.1 miles from Trenton, N.J., to New York City was bettered by four minutes. On the second day of service, the elapsed time, including the one stop in Newark, was cut to 47 minutes. The 35 "Jersey Arrow" cars, which have been called the world's "most sophisticated commuter cars" (RA, Oct. 7, p. 20), were built by St. Louis Car Division of General Steel Industries.

Truck tonnage increases across the board

Intercity truck tonnage in the week ended Oct. 26 showed an increase over the preceding week (0.6%) as well as over the corresponding week of 1967 (4.8%), according to the American Trucking Associations. The truck-tonnage index for the week ended Oct. 26 was 135, compared with 134 for the previous week and 129 for the '67 week. The weekly level of tonnage hauled during the period 1957-59 is taken as 100.

Seaway traffic registers gains over last year

The St. Lawrence Seaway Authority reports that cargo moving through both sections during the current navigation season has surpassed the levels attained in 1967. As of mid-October, 36.8 million tons of cargo had moved through the Montreal-Lake Ontario section, up 11.9% from the 32.9 million tons in 1967. The Welland section, meanwhile. reported 43.5 million tons this season, an increase of 10.4% over last year's 39.4 million tons.

Maine Central cuts deficit in third quarter

The Maine Central has reduced a net deficit of $197,190 for the third quarter of 1967 to a net deficit of $21,782 in the third quarter ending Sept. 30, 1968. Net ordinary income for the first 9 months of 1968, Maine Central said, was $197,444 compared to $120,237 for the corresponding period in 1967. The company said the ordinary income resulted from normal operations and does not include an extraordinary charge of $245,317 coming from settlement in 1968 with the New Haven Railroad for prior years' disputed per diem rentals for freight cars.

New York Transit plans record capital spending

The New York City Transit Authority has adopted a capital budget for fiscal 1969 of $250,050,000—about one-fifth as much money as all Class I passenger and freight railroads in the U.S. will spend on capital improvements this year. The budget, largest ever authorized by the NYCTA, will launch a massive $1.3-billion rapid-transit improvement and expansion program which was approved by the Mayor and the Board of Estimate Sept. 20. Included in the budget are major construction projects, plus 400 new air-conditioned subway cars costing $53.4 million.

CTA and its ops: Far apart, as wage talks start

With contract-expiration only a few weeks away, Chicago Transit Authority and the operating employees represented by the Amalgamated Transit Union are a long ways apart, as they begin contract talks. Union demands, CTA says, would increase costs by more than $105 million annually and would require the hiring of about 4,000 new employees. CTA is countering with proposals for no increase in wages and elimination of a cost-of-living escalator provision which has added up to 33½ cents an hour under the existing three-year pact. CTA General Manager Thomas B. O'Connor said the counter-proposal was made "because of the critical financial position of the Authority, which now has a deficit of more than $12 million, and also to help curb inflation." Two divisions of the transit union represent about 10,910 CTA bus and subway/elevated operators.

(*Continued from page 32*)

Medley, New York; **John P. Donohue,** Newark; **James C. Collett,** Rochester; and **George J. Henry,** Buffalo.

MILWAUKEE.—Lawrence W. Harrington, director of labor relations, elected vice president-labor relations, Chicago, to succeed **Samuel W. Amour,** who retired Sept. 30 after 47 years of service.

E. Stuart Rogers, regional manager of sales, New York, transferred to Kansas City, Mo., succeeding **Francis W. Baker,** who retired Oct. 31 after more than 48 years' service. **Laverne W. Schoeder,** district manager of sales, Des Moines, Iowa, advanced to assistant regional manager of sales there.

MISSOURI PACIFIC.—Tim Hogan, manager of news and publications, promoted to assistant director of public relations. Mr. Hogan will be responsible for the company's advertising. **Morris Gotschall, Jr.,** named editor of employe publications. Mr. Gotschall was formerly public relations assistant, **General Steel Industries.**

MONONGAHELA.—Lawrence A. Baggerly, division superintendent, **Penn Central,** Buffalo, N.Y., has been granted a leave of absence to become superintendent, Monongahela, Brownsville, Pa.

NORFOLK & WESTERN.—Retirement effective Nov. 1: **F. Paul Rudolph,** assistant freight traffic manager—TOFC rates, St. Louis, after more than 40 years of service; **Harry B. Lewis,** assistant traffic manager, Chicago, after more than 44 years of service; and **Benjamin G. Thomas,** manager tariff bureau, Roanoke, after more than 51 years of service.

Roy E. Foutze, Jr., tax agent, taxation and real estate department, named assistant to manager of insurance.

PENN CENTRAL.—John DeGrange, district passenger agent, Philadelphia, named manager—passenger sales, New York, succeeding **Frank J. Roth,** retired after 39 years of service. **Francis X. Hrehocik,** assistant manager of tickets sales and service, Pennsylvania Station, New York, appointed passenger agent, Newark Station, succeeding **Edward J. Gaynor,** (RA, Nov. 4, p. 23).

ROCK ISLAND.—Carl R. Hurt, superintendent, Southern division, El Reno, Okla., appointed assistant general manager, Kansas City, Mo. Mr. Hurt's successor is **William C. Hoenig,** superintendent, Missouri-Kansas division, who in turn is succeeded by **Harold G. McDaniel,** senior assistant superintendent, Missouri-Kansas division. **Carl K. Holt,** terminal superintendent, Blue Island, Ill., replaces Mr. McDaniel, and in turn is replaced by **Douglas C. Weitzman,** assistant superintendent, Silvis, Ill. **Coy R. Grogan,** assistant to general manager, Kansas City, named manager operating analysis, Chicago. **Richard J. Lane,** manager, operations administration, appointed assistant chief engineer, Chicago.

ST. LOUIS SOUTHWESTERN.—William R. Buskirk appointed general agent, San Francisco, Calif., succeeding **Ralph E. McGlothlen,** retired.

SANTA FE.—Henry N. Chastain, general assistant-mechanical department, Topeka, Kans., appointed general manager-mechanical department, Chicago, succeeding **T. T. Blickle,** who retired Oct. 31.

E. R. Robertson named assistant general manager, Eastern District, Topeka, to succeed **F. L. Elterman,** transferred.

Fred G. Timms, general traveling passenger agent, named general agent-passenger department, Chicago.

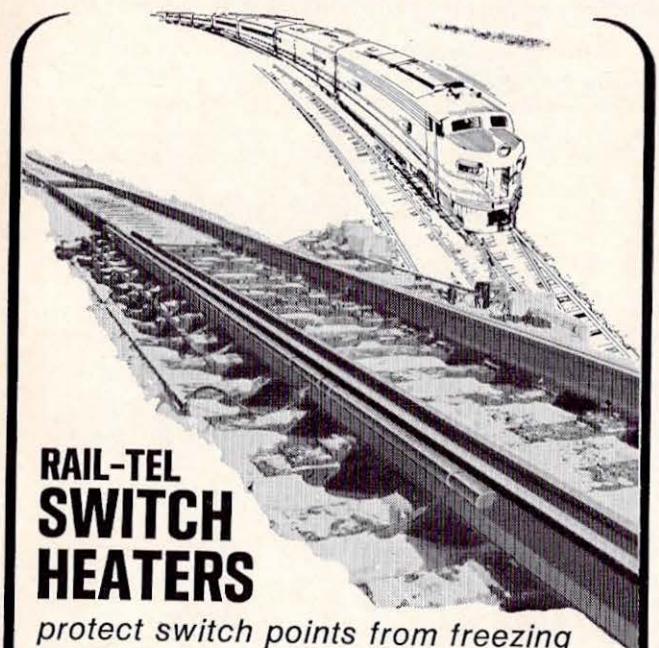
SEABOARD COAST LINE.—Horace M. Emerson, senior assistant vice president—traffic, elected vice president—freight traffic, Jacksonville, Fla. (RA, Nov. 4, p. 23).

UPPER MERION & PLYMOUTH.—Walter C. Rockey, assistant superintendent—marine, **Penn Central,** Jersey City, N.J., appointed general superintendent, UM&P, at Conshohocken, Pa.

WESTERN MARYLAND.—Donald C. Lombardi, assistant office manager, Baltimore, Md., appointed assistant to the manager of foreign commerce.

WESTERN PACIFIC.—Frank W. Steel, assistant vice president-freight pricing, retired after over 49 years of service.

(*Continued on page 38*)



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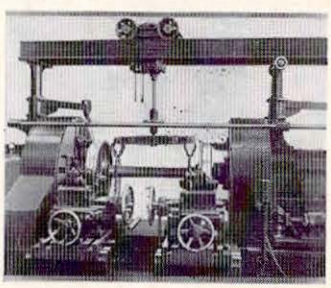

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(*Continued from page 37*)

SUPPLY TRADE

J. William Henderson, Jr. president of Buckeye International, Columbus, Ohio, has been elected chairman, **Railway Progress Institute,** succeeding **W. Ashley Gray, Jr.,** president of General Steel Industries, St. Louis (RA, Nov. 4, p. 7). **Frank L. Bredimus,** president of Symington Wayne Transportation Equipment Division, Dresser Industries, Inc., Chicago, elected RPI vice chairman, succeeding Mr. Henderson.

Craig B. Whitehead III has been appointed assistant to the president, **Stanray Corp.** Mr. Whitehead was formerly a research assistant at **Northwestern University** and also served as executive assistant to the director of **Northwestern's Institute for Management.**

Douglas S. Youngblood has joined the American Viscose Division, **FMC Corp.** as a sales representative for Avistrap nonmetallic industrial strapping, in the Richmond, Va., area. **C. Charles Odenrider** has been named sales representative, Seattle, Wash.

Frank D. Lyons has been named to the newly created position of executive vice president, operations, **Moss-American, Inc.**

Horace M. Emerson
SCL

J. W. Henderson Jr.
RPI

Frank L. Bredimus
RPI

C. B. Whitehead
Stanray

Thomas G. Valenty has been named vice president-operations, **Onan Division, Studebaker Corp.** He was previously vice president, research and development for Onan.

John L. Price has been named operations manager, **Barco Division, Aeroquip Corp.**

Michael L. Richmond has been named sales manager, **Research Division, General American Transportation Corp.** He was previously sales manager, **Aeronca, Inc.,** Middletown, Ohio.

Walter Djordjevic has been named manager of engineering, contract operations, **Swindell-Dressler Co.,** Pittsburgh-based engineering and construction division of Pullman Incorporated.

Humphry R. Odell has been appointed manager, Southeastern District, **Westinghouse Air Brake Division, WABCO,** Washington, D.C., succeeding **Donald Scherer,** resigned.

Paul Semack has been elected vice president, Sales and Traffic Division, **Transamerican Trailer Transport, Inc.,** Staten Island, N.Y. **Capt. Boleshaw Szolkowski** has been elected vice president, Operations Divisions, supervising all ship and terminal operations for TTT's S.S. Ponce de Leon.

Lord Corp., Erie, Pa., has announced the following executive changes: **Thomas Lord** elected chairman of the board and chief executive officer; **Donald M. Alstadt,** president; and **Richard C. Henshaw,** vice president.

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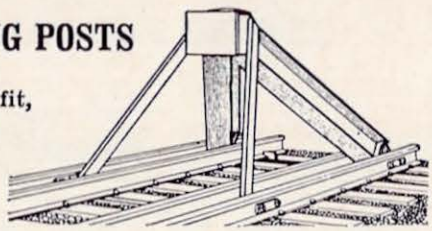

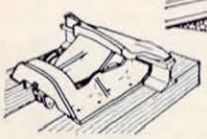

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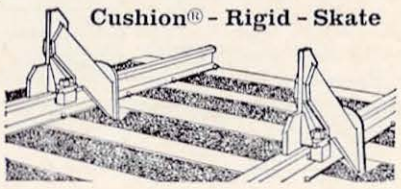

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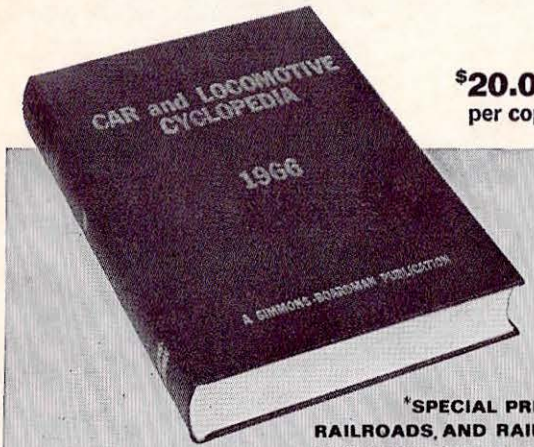

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VIEWPOINT

Can new advertising save the "California Zephyr"?

It would be both unfair and inaccurate, perhaps, to compare the continuing saga of the "California Zephyr" with "The Perils of Pauline." Pauline, if memory serves, always managed to be saved, just before fade-out. But the CZ? That may be another story, and right now only time will tell.

Twice, it may be recalled, the CZ has faced the moment of truth. Each time, the ICC has said "Try, try again." So Burlington, Rio Grande and Western Pacific *are* trying again. Rather faithfully, they're following ICC suggestions. And it will be interesting if, in 1969, these efforts once again prove fruitless and the Commission once again has the CZ before it.

Consider, for a moment, just one aspect of the CZ campaign—advertising. It would seem logical to assume that revenue increases of the magnitude required will have to come from the seatbelt set —automobile and jetliner users who can be convinced that the train is better. The new, bigger-budget CZ advertising is aimed in this direction. It's competitive, both in print and in radio versions.

Recently, however, the CZ people ran into a bit of trouble. A couple of major radio stations in Chicago declined to air a CZ commercial. Maybe it was *too* competitive, or something.

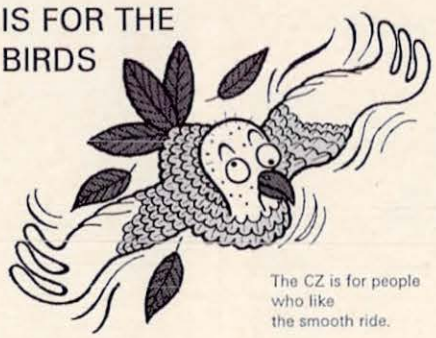
This particular plug used two voices, an announcer and a girl playing the role of airline stewardess. The announcer talked mostly about CZ scenery. His lines were rather bland. The "stewardess" did the welcome-aboard bit: "Please observe the no-smoking sign and keep your safety-belts fastened. . . .If we have a loss of oxygen or pressurization, oxygen masks will drop down from above . . . .You will notice the escape hatches near the wing and tail sections. . . ."

Her final word was this: "In the pouch in front of you, you'll find a little white bag. In case the flight gets rough, feel free to ask your neighbor for his. . . ."

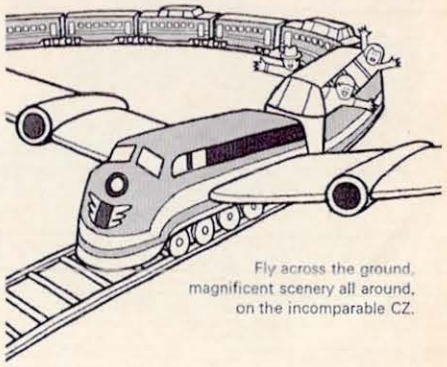
Maybe the CZ can make it, with ads like those below and with commercials that play up the Feather River Canyon. But what's really wrong with talking about escape hatches and little white bags? What's *wrong* with telling it like it is?

turbulence altitude-14 ft.

IS FOR THE BIRDS



The CZ is for people who like the smooth ride.



Fly across the ground, magnificent scenery all around, on the incomparable CZ.

Going our way? *The Vista-Dome* *California Zephyr*

Chicago • Denver • Salt Lake City • Oakland • San Francisco
via Burlington, Rio Grande and Western Pacific Railroads

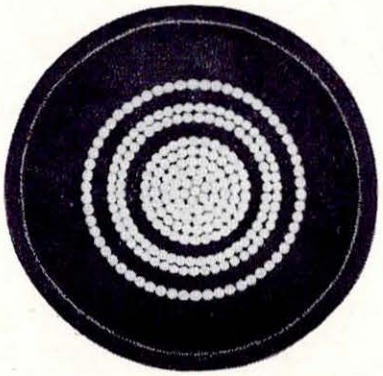
Going our way? *The Vista-Dome* *California Zephyr*

Chicago • Denver • Salt Lake City • Oakland • San Francisco
via Burlington, Rio Grande and Western Pacific Railroads

on guard

This is a hex sign, signifying long life, one of many which Pennsylvania Dutch farmers put on their barns to protect them against the elements—storms, drought, crop failure. You'll still see hex signs in Amish country, but these prosperous farmers do not rely on superstition for long life and success. They work too.

Below is a cross-section of a cable. It looks like many other cables, but the big difference is the permanent protection furnished by the insulation. That's where Kerite comes in. No other cable has been proved by time in the way the Kerite has. It works for you. Put a hex on trouble with Kerite. The Kerite Company, 30 Church Street, New York, N. Y. 10007.



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O Reliability
T
N Experience
R

Why was this ORTNER 100-ton Rapid Discharge hopper car selected as the basic carrier unit for the Ohio Power Company's amazing new Muskingum automatic electric railroad?

Because

the demonstration car, proving its capability to dump a 200,000 lb. load in 18 seconds, opened and closed its doors automatically again and again . . . and again . . . and again . . .